HISTORY BIRD



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THE

HISTORY OF BIRDS;

THEIR

VARIETIES AND ODDITIES:

COMPRISING

GRAPHIC DESCRIPTIONS

OF

Nearly all Known Species of Birds, with Fishes and Insects, the World over, and Illustrating their Varied Habits, Modes of Life, and Distinguishing Peculiarities by Means of Delightful Anecdotes and Spirited Engravings.

Prepared after Laborious Personal Research; with the Aid of the Great Works of Cuvier, Buffon, Wood, Dallas, Nuttall, Bonaparte, Agazzis, Jardine, Brewer, and many others;

BY

REV. W. BINGLEY, A.M.

OVER 500 SPIRITED ILLUSTRATIONS.

PHILADELPHIA:
EDGEWOOD PUBLISHING CO.

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ON THE STUDY OF NATURE.

There is no division of the animal world in which we are more led to admire the wisdom of the Supreme Being, than in the different feathered tribes. Their structure and habits of life are wonderfully fitted for the various functions they have to perform. Their bodies are clad with feathers, which form an envelope much lighter than hair. These lie over each other close to the body, like the tiles of a house; and are arranged from the fore-part backward, by which means the animals are enabled the more conveniently to cut their way through the air. For this purpose also the head is small and the bill somewhat wedge-shaped; the neck is long, and easily movable in all directions; and the body slender, sharp on the under side, and flat or round on the back. The bones likewise are hollow, and very light comparatively with those of terrestrial animals. For the purpose of giving warmth to the body, a short and soft down fills up all the vacant spaces between the shafts of the feathers.

Birds are enabled to rise into and move from place to place in the air, by means of the members that are denominated *wings*. The muscles by which the wings are move are exceedingly large; and have been estimated, in some instances, to constitute not less than a sixth part of the weight of the whole body. When a bird is on the ground, and intends to fly, he takes a leap, stretches his wings from the body, and strikes them downward with great force. By this stroke the body is thrown into an oblique position. That part o fthe force which tended upward is destroyed by the weight of the bird; and the horizontal force serves to carry him forward. The stroke being completed, he moves up his wings. These being contracted, and having their edges turned upward, meet with little resistance from the air. When they are sufficiently elevated, the bird makes a second stroke downward, and the impulse of the air again moves him forward. These successive strokes act as so many leaps taken in air. When the bird wants to turn to the right or left, he strikes strongly with the opposite wing, and this impels him to the proper side. The tail acts like the rudder of a ship; except that it moves him upward or downward, instead of sideways. If the bird wants to rise, he raises his tail; and if to fall, he depresses it; whilst he is in an horizontal position, it keeps him steady.

A bird, by spreading his wings, can continue to move horizontally in the air for some time, without striking them; because he has acquired a sufficient velocity, and his wings, being parallel to the horizon, meet with but little resistance. When he begins to fall, he can easily steer himself upward by his tail, till the motion he had acquired is nearly spent; he must then renew it by two or three more strokes of his wings. On alighting, he expands his wings and tail full against the air, that they may meet with all the resistance possible.

The centre of gravity in birds is somewhat behind the wings; and, to counterbalance this, most of them may be observed to thrust out their head and neck in flying. This is very apparent in the flight of Ducks, Geese, and several other species of water-fowl, whose centre of gravity is further backward than in the land birds. In the Heron, on the contrary, whose long head and neck, although folded up in flight, overbalance the rest of the body, the long legs are extended, in order to give the proper counterpoise, and to supply what is wanting from the shortness of the tail.

The *feathers* of birds would perpetually imbibe the moisture of the atmosphere; and, during rain, would absorb so much wet, as to impede their flight, had not the wisdom of Providence obviated this inconvenience by a most effectual expedient. They are each furnished on the rump with two glands, in which a quantity of unctuous matter is constantly secreting. This is occasionally pressed out by the bill, and used for the lubrication of the feathers. The birds that share, as it were, the habitations of man, and live principally under cover, do not require so great a supply, and therefore are not provided with so large a stock of this fluid, as those that rove abroad, and reside in the open element. It is on this account that poultry, when wet, make the ruffled and uncomfortable appearance that we observe.

As birds are continually passing among the hedges and thickets, their *eyes* are defended from injury by a membrane, which can at pleasure be drawn over the whole eye like a curtain. This is neither opaque nor wholly pellucid, but is somewhat transparent. In birds we find that the *sight* is much more piercing, extensive, and exact, than in the other orders of animals. The eye is large in proportion to the bulk of the head. This is a superiority conferred upon them not without a corresponding utility; it seems even indispensable to their safety and subsistence. Were this organ dull, or were it, in the least degree, opaque, the rapidity of their motion would expose them to the danger of striking against various objects in their flight. In this case their celerity, instead of being an advantage, would become an evil, and their flight would be restrained by the danger resulting from it. Indeed, we may consider the velocity with which an animal moves, as a sure indication of the perfection of its vision.

Birds *respire* by means of air-vessels, that are extended through their whole body, and adhere to the under surface of the bones. These, by their motion, force the air through the true lungs, which are very small, seated in the uppermost part of the chest, and closely braced down to the back and ribs. The use of this general diffusion of air through the bodies of birds, is to prevent their respiration from being stopped or interrupted by the rapidity of their motion through a resisting medium. The resistance of the air increases in proportion to the celerity of the motion; and were it possible for a man to move with swiftness equal to that of a Swallow, the resistance of the air, as he is not furnished with reservoirs similar to those of birds, would soon suffocate him.

Some species of birds are confined to particular countries; others are widely dispersed; and several change their abode at certain seasons of the year, and *migrate* to climates better suited to their temperament or mode of life than those which they leave. Many of our own birds, directed by a peculiar and unerring instinct, retire, before the commencement of the cold season, to the southern districts, and again return in the spring. The causes usually assigned for migration are, either a defect of food, or the want of a secure and proper asylum for incubation, and the nutrition of their offspring.

It appears from very accurate observations, founded on numerous experiments, that the peculiar notes, or *song*, of the different species of Birds, are acquired, and are no more innate than language is in man. The attempt of a nestling bird to sing, may be compared with the imperfect endeavor of a child to talk. The first essay seems not to possess the slightest rudiments of the future song; but, as the bird grows older, and stronger, it is not difficult to perceive what he is attempting. Whilst the scholar is thus endeavoring to form his song, when he is once sure of a passage, he commonly raises his tone; but when unable to execute the passage, he drops it. What the nestling is thus not thoroughly master of, he hurries over; lowering his tone, as if he did not wish to be heard, and as if he could not yet satisfy himself. A common Sparrow, taken from the nest when very young, and placed near a Linnet and Goldfinch, adopted a song that was a mixture of the notes of these two. Three nestling Linnets were educated, one under a Sky-lark, another under a Wood-lark, and the third under a Tit-lark; and, instead of the song peculiar to their own species, they adhered entirely to that of their respective instructors. A Linnet taken from the nest when about three days old, and brought up in the house of Mr Matthews, an apothecary, at Kensington, having no other sounds to imitate, almost articulated the words "pretty boy;" and a few other short sentences. The owner of this bird said, that it had neither the note nor the call of any bird whatever. It died in the year 1772.

These, and other well-authenticated facts, tend to prove that Birds have no innate notes, but that, like mankind, the language they first learn after they come into the world, is generally that which they adopt in after life. It may, however, seem unaccountable, why, in a wild state, they adhere so steadily as they do to the song of their own species only, when the notes of so many others are to be heard around them. This evidently arises from the attention that is paid by the nestling bird to the instructions of its own parent only, and it is generally disregarding the notes of all the rest. Persons, however, who have an accurate ear, and have studied the notes of birds, can very often distinguish some that have a song mixed with the notes of other species.

The *food* of birds is of course very different in the different kinds. Some are

altogether carnivorous; others, as many of the web-footed tribes, live on fish; some on insects and worms, and many on fruits or grain. The extraordinary powers of the gizzard in the graminivorous tribes, in comminuting their hard food, so as to prepare it for digestion, are such as almost to exceed credibility. In order to ascertain the strength of these stomachs, the Abbe Spallanzani made many cruel, though at the same time curious and not uninteresting experiments. Tin tubes full of grain were forced into the stomachs of Turkeys; and, after remaining twenty hours, were found to be broken, compressed, and distorted in a most irregular manner. The stomach of a Cock, in the space of twenty-four hours, broke off the angles of a piece of rough, jagged glass; and, on examining the gizzard, no wound or laceration appeared. Twelve strong tin needles were firmly fixed into a ball of lead, with their points projecting about a quarter of an inch from the surface; thus armed, it was covered with a case of paper, and forced down the throat of a Turkey. The bird retained it a day and a half without exhibiting the least symptom of uneasiness. When the Turkey was killed, the points of nearly all the needles were found to be broken off close to the surface of the ball Twelve small lancets, very sharp both at the points and edges, were fixed in a similar ball of lead. These were given in the same manner, to a Turkey-cock, and left eight hours in the stomach; at the expiration of which time that organ was opened, but nothing appeared except the naked ball; the twelve lancets having been all broken to pieces. From these facts it was concluded, that the stones so often found in the stomachs of many of the feathered tribes, are highly useful in assisting the gastric juices to grind down the grain and other hard substances which constitute their food. The stones themselves, also, being ground down and separated by the powerful action of the gizzard, are mixed with the food, and no doubt contribute to the health as well as to the nutriment of the animals.

All birds are oviparous, or produce *eggs*, from which, after the process of incubation, the young are extruded. These eggs differ in the different species, in number, figure, and color. They contain the rudiments of the future offspring; for the maturation and bringing to perfection of which, in the incubation, there is a bubble of air at the large end, betwixt the shell and the inside skin. It is supposed that, from the warmth communicated by the sitting bird to this confined air, its spring is increased beyond its natural tenor, and, at the same time, its parts are put into motion by the gentle rarefaction. Hence pressure and motion are communicated to the parts of the egg; and these, in some unknown manner, gradually promote the formation and growth of the young one, till the appointed time of its exclusion. The use of that part of the egg called the treddle, is not only to retain the different liquids in their proper places, but also to keep the same part of the yolk uppermost; which it will effectually do, though the egg be turned nearly every way. The mechanism seems to be this: the treddle is specifically lighter than the white in which it swims; and being connected with the membranes of the yolk, at a point somewhat out of the direction of its axis, this causes one side to become heavier than the other. Thus the yolk, being made buoyant in the midst of the white, is, by its own heavy side, kept with the same part always uppermost.

The *nests* of birds are, in general, constructed with astonishing art; and with a degree of architectural skill and propriety, that would foil all the boasted talents of man to imitate.

> Mark it well, within, without:
> No tool had he that wrought; no knife to cut,
> No nail to fix, no bodkin to insert,
> No glue to join; his little beak was all.
> And yet, how neatly finish'd! What nice hand,
> With every implement and means of art,
> And twenty years' apprenticeship to boot,
> Could make me such another? Fondly then
> We boast of excellence, whose noblest skill
> Instinctive genius foils.

In most of the species both the male and female assist in this interesting operation. They each bring materials to the place: first sticks, moss, or straws, for the foundation and exterior: then hair, wool, or the down of animals or plants, to form a soft and commodious bed for the eggs, and for the bodies of their tender young, when hatched. The outsides of the nests bear in general so great a resemblance in color

to the surrounding foliage or branches, as not easily to be discovered even by persons who are in search of them.

This is one of those numerous and wonderful contrivances which compel us to believe that every part of the creation is under the protection of a superintending Being, whose goodness knows no bounds. Without this, what can we suppose it is that instigates a creature which may never before have had young, to form a nest, hollow, for the purpose of containing eggs; (things that as yet it knows nothing of;) and of concentrating a necessary proportion of heat for the incubation? Without this, what can we suppose it is that dictates the necessity of forming the outside of this nest with coarse materials, as a foundation, and of lining its interior with more delicate substances? How do these animals learn that they are to have eggs, and that these eggs will require a nest of a certain size and capacity? Who is it that teaches them to calculate the time with such exactness, that they never lay their eggs before the receptacle for them is finished? No one can surely be so blind as to observe all this, and not to perceive the superintendence of a beneficent wisdom influencing every operation.

The *classification* of birds is principally founded on their habits of life; and on the formation of their external parts, particularly of their bills. The grand division is into LAND BIRDS and WATER BIRDS.

LAND BIRDS.

1. *Rapacious Birds* (*accipitres*), have their bill hooked; and on each side of the upper mandible there is an angular projection. They consist of Vultures, Eagles or Hawks, and Owls. These birds are all carnivorous, and associate in pairs; and the female is generally larger and stronger than the male.

2. *Pies* (*picæ*). These have their bills sharp at the edge, compressed at the sides, and convex on the upper surface. The principal genera are Shrikes, Crows, Rollers, Orioles, Grackles, Humming-birds, Parrots, Toucans, Cuckoos, Woodpeckers, Hornbills, and Kingfishers. Some of them associate in pairs, and others congregate. They live on various kinds of food; and usually build their nests in trees, the male feeding the female during the process of incubation.

3. *Passerine Birds* (*passeres*), have a conical, sharp-pointed bill. To this order belong the Finches, Grosbeaks, Buntings, Thrushes, Fly-catchers, Swallows, Larks, Wagtails, Titmice, and Pigeons. While breeding they live chiefly in pairs; and the nests of several of the species are of curious and singular construction. The greater number of them sing. Some of them subsist on seeds, and others on insects.

4. *Gallinaceous Birds* (*gallinæ*). The bills of these birds have the upper mandible considerably arched, Pheasants, Turkeys, Peacocks, Bustards, Pintadoes, and Grouse, all belong to this order. They live principally on the ground; and scratch the earth with their feet for the purpose of finding grain and seeds. They usually associate in families, consisting of one male and several females. Their nests are artlessly formed on the ground; and the females produce a numerous offspring

WATER BIRDS.

5. *Waders* (*grallæ*). These have a roundish bill, and a fleshy tongue; and the legs of most of the species are long. The principal genera are the Herons, Plovers, Snipes, and Sandpipers, which live for the most part among marshes and fens, and feed on worms and other animal productions. They form nests on the ground.

6. *Swimmers* (*anseres*). The bills of these birds are broad at the top, and covered with a membranaceous skin. The tribes best known are the Ducks, Auks, Penguins, Petrels, Pelicans, Guillemots, Gulls, and Terns. They live chiefly in the water, and feed on fish, worms, and aquatic plants. Most of the species are polygamous, and construct their nests among reeds or in moist places. The females lay many eggs.

FISHES.

Were we acquainted with no other animals than those which inhabit the land, and breathe the air of our atmosphere, it would appear absurd to be told that any race of beings could exist only in the water: we should naturally conclude, from the effect produced on our own bodies when plunged into that element, that the powers of life could not there be sustained. But we find, from experience, that the very depths of the ocean are crowded with inhabitants, which, in their construction, modes of life, and general design, are as truly wonderful as those on the land. Their history, however, must always remain imperfect, since the element in which they live is beyond human access, and of such vast dimensions, as to throw by far the greater part of them altogether out of the reach of man.

That they are in every respect, both of external and internal conformation, well adapted to their element and modes of life, we are not permitted to doubt. The body is, in general, slender, flattened at the sides, and always somewhat pointed at the head. This enables them, with ease, to cut through the resisting medium which they inhabit. Some of them are endowed with such extraordinary powers of progressive motion, that they are able not only to overtake the fastest sailing vessels, but, during the swiftest course of these, to play round them without any apparently extraordinary efforts.

Their bodies are in general covered with a kind of horny *scales*, to keep them from being injured by the pressure of the water. Several of them are enveloped with a fat and oily substance, to preserve them from putrefaction, and to guard them from extreme cold. They *breathe* by means of certain organs that are placed on each side of the neck, and called gills. In this operation they fill their mouth with water, which they throw backward, with so much force as to lift open the great flap, and force it out behind. And in the passage of this water, among the feather-like processes of the gills, all, or at least the greatest part, of the air contained in it, is left behind, and carried into the body to perform its part in the animal economy. In proof of this fact, it has been ascertained that, if the air be extracted from water into which fish are put, they immediately come to the surface and gasp as if for breath. Hence, distilled water is to fish what the vacuum formed by an air-pump is to most other animals. This is the reason why, in winter, when a fish-pond is entirely frozen over, it is necessary to break holes in the ice, not that the fish may come to feed, but that they may come to breathe. Without such precaution, if the pond be small, and the fish be numerous, they will die from the corruption of the water.

Fishes are nearly of the same specific gravity with water, and *swim* by means of their fins and tail. The muscular force of the latter is very great. Their direct motion is obtained by moving the tail from one side to the other, with a vibrating motion; and, by strongly bending the tail sideways, this part of their body acts like the rudder of a ship, and enables them to move in an opposite direction. The fins of a fish keep it upright, especially the belly-fins, which act like feet; without these it would float with its back downward, as the centre of gravity lies near the back.

In addition to the fins and tail, the *air-bladder* is of material assistance to fish in swimming, as it is by means of this that they increase or diminish the specific gravity of their bodies. When, by their abdominal muscles, they compress the air contained in this bladder, the bulk of their body is diminished, their weight compared with that of the water, is increased, and they consequently sink. If they want to rise, they relax the pressure of the muscles, the air-bladder again acquires its natural size, the body is rendered more bulky, and they ascend towards the surface. This bladder lies in the abdomen, along the course of the back-bone. In some fish it is single, and in others double. The air appears to be conveyed into it from the blood, by means of vessels appropriated to that purpose, and it can be discharged thence either into the stomach or the mouth. Those fish which are destitute of air-bladders have much less facility in elevating themselves in the water than any others. The

greater number of them, consequently, remain at the bottom, unless the form of their body enables them to strike the water downwards with great force. This the Skate, the Thornback, and other species of *Rays* do with their large pectoral fins, which are of such size and strength as almost to resemble wings; and the mode in which these fish elevate themselves in the water, is precisely the same as that which is employed by birds in flying.

The *teeth* of fish are usually situated in their jaws: in some species, however, there are teeth on the tongue and palate, and even in the throat. These are generally sharp-pointed and immovable; but in the Carp they are obtuse, and in the Pike so movable as to appear fixed only to the skin. The *tongue* is in general motionless and fleshy. Being furnished with *nostrils* and olfactory nerves, there can be little doubt that fishes possess the sense of smelling.

The *bones* of these animals are formed of a kind of intermediate substance, between true bones and cartilages. The back-bone extends through the whole length of the body, and consists of vertebræ, strong and thick toward the head, but weaker and more slender as they approach the tail. The ribs are attached to the processes of the vertebræ, and enclose the breast and abdomin. Several fish, as the Rays, have no ribs; and others, as the Eel and Sturgeon, have very short ones. In many of the species there are small bones between the muscles, to assist their motion.

The *sight* of fishes is perhaps the most perfect of all their senses. The eye, in general, is covered with the same transparent skin that covers the rest of the head; the use of which is probably, to defend this organ in the water, for none of the species have eyelids. The globe of the eye is somewhat depressed in front, and it is furnished behind with a muscle, which serves to lengthen or flatten it, as the animal may require. The crystalline humor, which in quadrupeds is flattened, is in fishes nearly globular. The eyes of fish are usually thought to be immovable, but this does not appear to be the case: those of some species are known to turn in the sockets.

In fishes the *organ of hearing* is placed at the sides of the skull; but differing in this respect from that in quadrupeds and birds, it is entirely distinct and detached from it. In some fishes, as those of the Ray kind, the organ of hearing is wholly surrounded by the parts containing the cavity of the skull: in others, as the Salmon and Cod, it is partly within the skull. In its structure this organ is by no means so complicated as in quadrupeds and other animals that live in the air. Some genera, as the Rays, have the external orifice very small, and placed upon the upper surface of the head; but in others there is no external opening whatever.

The *food* of these animals is extremely various. Insects, worms, or the spawn of other fish, sustain the smaller tribes; which, in their turn, are pursued by larger foes. Some feed on mud and aquatic plants, but by far the greater number subsist on animal food only, and they are so ravenous as often not to spare even those of their own kind. Innumerable shoals of some species pursue those of others through vast tracts of the ocean; from the vicinity of the pole sometimes even to the equator. In these conflicts, and in this scene of universal rapine, many species must have become extinct, had not the Creator accurately proportioned their means of escape, their production, and their numbers, to the extent and variety of the dangers to which they are exposed. The smaller species are consequently not only more numerous and prolific than the larger, but their instinct impels them to seek for food and protection near the shore, where, from the shallowness of the water, many of their foes are unable to pursue them.

Fishes are in general oviparous: some few, however, produce their offspring alive. The males have the *milt*, and the females the *roe*, but some individuals of the Cod and Sturgeon tribes are said to contain both. The spawn of the greater number is deposited in the sand or gravel: many of the fish, however, which reside in the ocean, attach their ova to sea-weeds. The fecundity of these tribes far surpasses that of any other race of animals. In the spawn of a single Cod upwards of nine millions of eggs have been ascertained, and nearly a million and a half have been taken from the interior of a Flounder.

The *longevity* of fish is far superior to that of other creatures; and there is reason to suppose that they are, in a great measure, exempted from disease. Instead of suffering from the rigidity of age, which is the cause of natural decay in land animals, their bodies continue to increase with fresh supplies; and, as the body grows, the conduits of life seem to furnish their stores in greater abundance. How long these

animals continue to live, has not yet been ascertained. The age of man seems not equal to the life of the most minute species. In the royal ponds of Marli, in France, there are some particular fish which, it is said, have been preserved tame since the time of Francis the First, and which have been individually known to the persons who have succeeded to the charge of them ever since that period.

Fish, like land animals, are either solitary or gregarious. Some, as Trout, Salmon, &c., migrate to considerable distances in order to deposit their spawn. Of the sea-fish, the Cod, the Herring, and many others, assemble in immense shoals, and migrate in these shoals through vast tracts of the ocean.

In the Gmelinian edition of the Systema Naturæ, the Fishes are divided into six orders:

1. *Apodal;* with bony gills, and no ventral fins, as the Eels.
2. *Jugular;* with bony gills, and ventral fins before the pectoral ones, as the Cod and Haddock.
3. *Thoracic;* with bony gills and ventral fins placed directly under the thorax, as the Turbot, Sole, Perch, and Mackerel.
4. *Abdominal;* with bony gills, and ventral fins placed behind the thorax, as the Salmon, Pike, Herring, and Carp.
5. *Branchiostegous:* with gills destitute of bony rays, as the Pike-fish and Lump-fish.
6. *Chondropterygious;* with cartilaginous gills, as the Sturgeon, Shark, Skate, and Lamprey.

INSECTS.

The insect division of the animal world received its name from the individuals of which it is composed having a separation in the middle of their bodies, by which they are cut, as it were, into two parts. These parts are in general connected by a slender ligament or hollow thread.

Insects *breathe* through pores arranged along their sides;* and have a scaly or bony skin, and many feet. Most of them are furnished with wings. They are destitute of brain, nostrils, and eyelids. Not only the place of the liver, but of all the secretory glands, is, in them, supplied by long vessels that float in the abdomen. The mouth is in general situated under the head; and is furnished with transverse jaws, with lips, a kind of teeth, a tongue, and palate: it has also, in most instances, four or six palpi, or feelers. Insects have also movable antennæ, which generally proceed from the front part of the head, and are endowed with a very nice sense of feeling.

In a minute examination of this class by Professor Cuvier, neither a heart nor arteries have been detected; and this gentleman says that the whole organization of insects is such as we might have expected to find, if we had previously known that they were destitute of such organs. Their nutrition, therefore, seems to be carried on by absorption, as is the case with the polypes, and other zoophytes.†

Nearly all Insects (except Spiders, and a few others of the apterous tribe, which proceed nearly in a perfect state from the egg) undergo a METAMORPHOSIS, or change at three different periods of their existence.

The lives of these minute creatures, in their perfect state, are in general so short that the parents have seldom an opportunity of seeing their living offspring. Consequently, they are neither provided with milk, like viviparous animals, nor are they, like birds, impelled to sit upon their eggs in order to bring their offspring to perfection. In place of these, the all-directing Power has endowed each species with the astonishing faculty of being able to discover what substance is fitted to afford the food proper for its young; though such food is, for the most part, totally different from that which the parent itself could eat. Some of them attach their *eggs* to the bark, or insert them into the leaves of trees and other vegetable substances; others form nests, which they store with insects or caterpillars that will attain the exact state in which they may be proper food for their young ones, when they shall awaken into life; others bury their eggs in the bodies of other insects; and others adopt very surprising methods of conveying them into the body, and even into the internal viscera of larger animals. Some drop their eggs into the water, an element in which they would themselves soon be destroyed. In short, the variety of contrivances that are adopted by insects to ensure the subsistence of their offspring, are beyond enumeration.

From the eggs of all insects proceed what are called *larvæ*, grubs, or caterpillars. These consist of a long body, covered with a soft, tender skin, divided into segments or rings. The motions of many of the larvæ are performed on these rings only, either in the manner of serpents, or by resting alternately each segment of the body on the plane which supports it. Such is the motion of the larvæ of Flies, emphatically so called, and of Wasps and Bees. Sometimes the surfaces of the rings are covered with spines, stiff bristles, or hooks, this is the case in Gad-flies, Crane-flies, and some others. The bodies of the larvæ, in some orders of insects, have, toward the head, six feet, each formed of three small joints; the last of which is scaly, and terminates in a hook: this is usual in those of Beetles and Dragon-flies. The larvæ of Butterflies and Moths, besides six scaly articulated feet, have a variable number of other false feet, which are not jointed, but terminate in hooks disposed in circles

* The Crab and Lobster tribes form an exception to this rule, for they respire by means of gills.

† He excepts the Crabs and Lobsters, which he arranges in a class by themselves, and denominates Crustaceous animals.

and semi-circles. These hooks, which are attached to the skin by a kind of retractile tubercles, serve as cramps to assist their motion on other bodies. The larvæ of such insects as undergo only a semi-metamorphosis, as Locusts, Crickets, and Cock roaches, and those of insects that undergo no transformation, as the Spiders, Ticks, and Mites, do not differ, with respect to their feet, from the perfect insects. In this larva state many insects remain for months, others for a year, and some even for two or three years. They are, in general, extremely voracious, oftentimes devouring more than their own weight in the course of twenty-four hours.

As soon as all their parts become perfected, and they are prepared to appear under a new form, called a pupa or *chrysalis*,* most species of insects fix upon some convenient place, for the performance of this arduous operation. This is generally a place where they are not exposed to danger; for in their transformation, they have neither strength to resist, nor swiftness to avoid, the attack of an enemy. That Power which instructed the parents to deposit their eggs in a proper receptacle, directs the offspring to the most secure and appropriate situation for their future defenceless state. Some of them spin webs or cones, in which they enclose themselves; others undergo their change in decayed wood; and others conceal themselves beneath the surface of the earth. Preparatory to the transformation, they cease to take any food, and, for some days, continue in a state of inactivity. During this time the internal organs are gradually unfolding themselves. When the completion is at hand, many of them may be observed alternately to extend and contract their bodies, in order to disengage themselves from the caterpillar skin. The hinder parts are those first liberated: when this is done, the animals contract, and draw the skin up towards their head; and, by strong efforts, they soon afterward push it entirely off. In their chrysalid state they remain for some time, to all appearance inanimate; but this is only in appearance, for, on being taken into the hand, they will always be found to exhibit signs of life. It is singular that, in the changes of insects, the intestinal canal is frequently very different in the same individuals, as they pass through the three states.

As soon as the animal, within the shell of the chrysalis, has acquired strength sufficient to break the bonds that surround it, it exerts its powers, and appears to the world in a *perfect* state. For a little while it continues humid and weak; but, as the humidity evaporates, its wings and shell become hardened, and it soon afterward commits itself in safety to its new element.

Some writers have conjectured that the *antennæ* or horns of insects are their organs of hearing; for it is evident, from various experiments, that insects are possessed of this sense in a degree as exquisite as most other animals, although, from their minuteness, we perhaps may never discover by what means. The antennæ, however, seem little likely to answer the purpose of ears. These instruments, of apparently exquisite sensibility, appear adapted to very different purposes, but to purposes with which we may remain long unacquainted.

The *eyes* of insects are formed of a transparent crustaceous set of lenses, so hard as to require no coverings to protect them. These, like multiplying glasses, have innumerable surfaces, on every one of which objects are distinctly formed; so that, if a candle be held opposite to them, it appears multiplied almost to infinity on their surfaces. Other creatures are obliged to turn their eyes; but insects have always some or other of these lenses directed toward objects, from what quarter soever they may present themselves. All these minute hemispheres are real eyes, through which every thing appears topsy turvy.

M. Leeuwenhoek, with the aid of a microscope, used as a telescope, looked through the eye of a Dragon-fly, and viewed the steeple of a church, which was two hundred and ninety-nine feet high, and seven hundred and fifty feet from the place where he stood. He could plainly see the steeple, though not apparently larger than the point of a fine needle. He also viewed a house; and could discern the front, distinguish the doors and windows, and perceive whether the windows were open or shut. Mr. Hook computed that there were fourteen thousand of these lenses in the two eyes of a Drone; and M. Leeuwenhoek reckons twelve thousand five hundred and forty-four lenses in each eye of the Dragon-fly. The pictures of objects that are delineated on these, must be millions of times less than those formed on the

* The chrysalis is occasionally called Aurelia, Bean, or Cod.

human eye. Many insects still smaller have eyes, so contrived as to discern objects some thousands of times less than themselves; for such the minute particles on which they feed must certainly be.

With respect to the *wings* of insects, those of the two first orders of Linnæus have their wings defended by a pair of hard crustaceous cases called elytra. The three subsequent orders have four membranaceous wings, without elytra. All the insects of the sixth order have but two wings, and under each of these, at its base, there is a poise or balancer like a little knob. These poises are commonly little balls, each placed on the top of a slender stalk, and movable every way at pleasure. In some they stand alone, but in others, as in the Flesh-fly tribe, they have little covers or hollow membranaceous scales, each of which somewhat resembles a spoon without a handle: every time the insect strikes the air with its wings, a very quick motion may be perceived in the balancer; and in the Flesh-flies, when this moves, it strikes against the little scale, and thus assists in producing the well-known buzzing sound that is made by flies when on the wing. The use of the poises to an insect seems to be precisely the same as that of a long pole, loaded at each end with lead, to a rope-dancer: they render the body steady, and obviate all its unsteadiness in flight.

The structure of the *feet* of these diminutive creatures is truly admirable. Those insects that live altogether in water have their feet long, flat, and somewhat hairy at the edges, well adapted to aid their motions in that element. Such as have occasion to burrow into the earth have their legs broad, sharp-edged, and serrated. These that use their feet only in walking, have them long and cylindrical. Some have their feet furnished with sharp, hooked claws, and skinny palms, by which, from the pressure of the atmosphere upon them, they are enabled to walk on glass and other smooth surfaces, even with their backs downward. Others have somewhat like sponges that answer the same end; and the spider has each foot armed with a kind of comb, probably for the purpose of separating the six threads that issue from so many orifices of its body, and preventing them from tangling. In insects which have occasionally to pass over spaces by leaping, the thighs of the hind legs are peculiarly large and thick.

The *tongue* of insects is a taper and compact instrument, by which they suck their food. Some of them can contract or expand it; and others, as the Butterflies, roll it up under their head, somewhat like the spring of a watch. In many it is enclosed within a sheath; and in several, as the Flies, it is fleshy and tubular.

The *mouth* is generally placed somewhat underneath the front part of the head; but in a few of the tribes it is situated below the breast. Some insects have it furnished with a kind of forceps, for the purpose of seizing and cutting their prey; and in others it is pointed, to pierce animal or vegetable substances, and suck their juices. In several it is strongly ridged with jaws and teeth, to gnaw and scrape their food, carry burdens, perforate the earth, nay the hardest wood, and even stones, for the habitations and nests of their offspring. In a few the tongue is so short as to appear to us incapable of answering the purpose for which it is formed; and the Gadflies appear to have no mouth.

Near the mouth are situated the *palpi* or *feelers:* these are generally four, but sometimes six in number. They are a kind of thread-shaped articulated antennæ. Their situation, beneath and at the sides of the mouth, renders them, however, sufficiently distinct from the proper antennæ. Some writers consider them to be useful in holding food to the mouth, whilst the insects are eating.

Linnæus has divided the animals of this class into seven orders,* viz:

1. *Coleopterous insects* (derived from the Greek words κολεος a sheath, and πτερον a wing.) These are the *Beetles*, or such as have crustaceous elytra or shells, which shut together, and form a longitudinal suture down the back. Of this order are the Chafer tribes, and several others.

2. *Hemipterous insects* (from ἡμισυς half, and πτερον a wing,) have their upper wings half crustaceous, and half membranaceous, not divided by a longitudinal suture, but incumbent on or crossed over each other; as the Cockroach, Locust, &c.

3. *Lepidopterous insects* (from πελις a scale, and πτερον a wing,) are those having

* Coleoptera, Hemiptera, Lepidoptera, Neuroptera, Hymenoptera, Diptera, and Aptera.

four wings covered with fine scales apparently like powder or meal; as the Butterflies and Moths.

4. *Neuropterous insects* (from νευρον a nerve, and πτερον a wing,) have four membranaceous, transparent, naked wings, in which the membranes cross each other so as to appear like net-work. The tail has no sting, but is sometimes furnished with appendices like pincers, by which the males are distinguished. The common Dragon-fly is the best example that can be brought to illustrate this order; and the genus Phrygenea forms an exception with respect to the net-work appearance of the wings.

5. *Hymenopterous insects* (from ὑμην a membrane, and πτερον a wing.) The insects belonging to this order have generally four membranaceous naked wings: the neuters, however, in some of the genera, and in others the males or females, are destitute of wings. The wings do not so much resemble net-work as those of the last order. The tail, except in the male, is armed with a sting. The Bee, the Wasp, and the Ant are of this tribe.

6. *Dipterous insects* (from διπλοος double, and πτερον a wing.) are those which have only two wings, each furnished at its base with a poise or balancer. The common House-flies and the Gnat are familiar examples of this order.

7. *Apterous insects* (from α without, and πτερον a wing.) This order contains all such insects as are destitute of wings in both sexes; as the Spider, the Flea, and the Louse.

History of Birds, Fishes and Insects.

BIRDS.

RAPACIOUS BIRDS.

In the Birds which constitute the present order, the bill is some what hooked, having the upper mandible or division either dilated a little towards the point, or furnished with a tooth-like process. The nostrils are open. The feet are stout, and armed with strong hooked claws three placed forward, and one backward.

OF THE VULTURES IN GENERAL.

The Vultures have their bill straight, and hooked only at the end its edges are sharp, like a knife, and the base is covered with a thin skin. The head, cheeks, and, in many species, the neck, are either naked, or clad only with down or short hairs. The tongue is large, fleshy, and cleft at the end. The craw often hangs over the breast. The legs and feet are covered with great scales; and the first joint of the middle toe is connected to that of the outermost by a strong membrane. The claws are large, somewhat hooked, and very blunt; and the inside of the wings is covered with down.



The characters which principally distinguish the Birds of this tribe from the Eagles and Falcons, are the want of feathers on part of the head, and sometimes even on the whole head and neck; and their voracious manners, as they never kill prey from *choice*, but in general devour only such animals as are either dying, or are found dead and putrid. Their sense of smelling is so exquisite, that they are able to scent a dead body at the distance of many miles. "They are (says Mr. Pennant) greedy and voracious to a proverb; and not timid, for they prey in the midst of cities, undaunted by mankind." After some of the battles in the East, where vast slaughter takes place, of Elephants, Horses, and men, voracious animals crowd to the field from all quarters, and of these, Jackals, Hyænas, and Vultures, are the chief. Even in the places where the last are otherwise seldom observed, the plain will on such occasions be found covered with them. Vast multitudes will be seen in the air, descending from every side,

to partake of the carnage. These the Indians believe to be brought by having an instinctive presentiment of slaughter, some days before the event.

It is observed that Vultures, in general, become less numerous as the climate becomes colder; and that, in the more northern countries, they are never found. Their presence is a kind disposition of Providence in the hotter regions, to prevent the putrid effluvia of the dead from too much injuring the health of the living.

THE CONDOR.

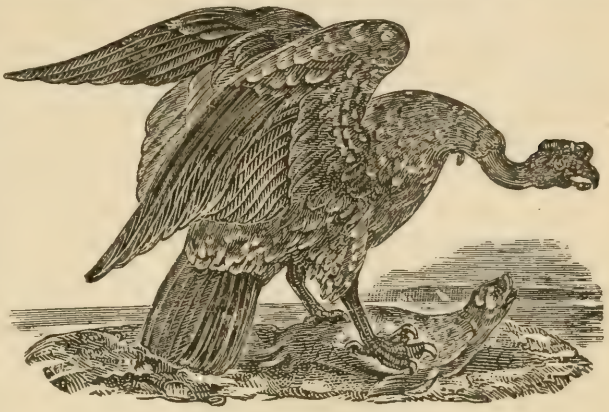
This bird considerably exceeds in size the largest eagle. Its expanded wings sometimes extend to the dimensions of eighteen feet. Its body, bill, and talons, are proportionably large and strong; and its courage is equal to its strength. The throat is naked, and of a red color. The upper parts, in some individuals, (for they differ greatly in color,) are variegated with black, grey, and white; and the belly is scarlet. The head of a Condor that was shot at Port Desire, off Penguin Island, resembled that of an eagle; except that it had a large comb upon it. Round the neck it had a white ruff, much resembling a lady's tippet. The feathers on the back were as black as jet, and perfectly bright. The legs were remarkably strong and large; the talons like those of an eagle, except that they were not so sharp: and the wings, when extended, measured, from point to point, twelve feet In the Leverian Museum there were two specimens of the Condor, supposed to be male and female; on the breast they had a kind of pendulous, pear-shaped substance. The male measured ten feet from tip to tip of the wings. The Condor is an inhabitant of South America.



CONDOR.

Of the strength of this enormous bird we may form some idea, from the account that has been given of one of them which was shot

by Father Feuillée, in the valley of Ylo in Peru. He informs us, that he discovered a Condor perched upon a great rock; and that he approached it within musket-shot and fired; but that, as the gun was only loaded with swan-shot, the lead could not do much more than pierce its feathers. He perceived, however, from its motions, that it was wounded: for it rose heavily, and could with difficulty reach another great rock, five hundred paces distant. He therefore charged his piece with a bullet, and hit the bird under the throat. He then saw that he had succeeded, ran to secure his victim: but it struggled obstinately with death; and, resting upon its back, repelled his attempts with its extended talons. He continues, "I was at a loss on what side to lay hold of it; and I believe that if it had not been mortally wounded, I should have found great difficulty in securing it. At last I dragged it down from the top of the rock; and, with the assistance of a sailor, carried it away to my tent."



CONDOR AND FISH.

Some writers have affirmed that the Condor is twice as large as an Eagle, and so strong that it can pounce upon and devour a whole Sheep; that it spares not even Stags, and can easily overthrow a man. Others say, that its beak is so firm that it can pierce a Cow's hide, and that two Condors are able to kill an Ox and devour the carcass.

Ulloa states, that he once saw, in South America, a Condor seize and fly away with a Lamb. "Observing (says he) on a hill adjoining to that where I stood, a flock of Sheep in great confusion, I saw one of these birds flying upwards from among them, with a Lamb between its claws; and when at some height, it dropped it. The bird immediately followed, took it up, and let it fall a second time; when it flew out of sight, on account of the Indians, who, alarmed by the cries of the boys and the barking of the Dogs, were running towards the place.

Frezier, in a voyage to the South Seas, also thus describes the Condor:—"We one day killed a bird of prey called the Condor; which measured nine feet from the end of one wing to the end of the other, and had a brown comb or crest, but not jagged like that of a Cock. The fore part of the throat was red, without feathers, like that of a Turkey. These birds are generally large and strong enough to take up a Lamb. In order to separate one of those animals from the flock, they form themselves into a circle, and advance towards them with their wings extended, that, by being driven too close together, the full-horned

Rams may not be able to defend their young-ones. They then pick out the Lambs, and carry them off. Garcillasso says, there are some Condors in Peru which measure sixteen feet from the point of one wing to that of the other, and that a certain nation of Indians adore them."

These enormous animals make their nests among the highest and most inaccessible rocks. The female lays two white eggs, somewhat larger than those of a Turkey,



CONDOR.

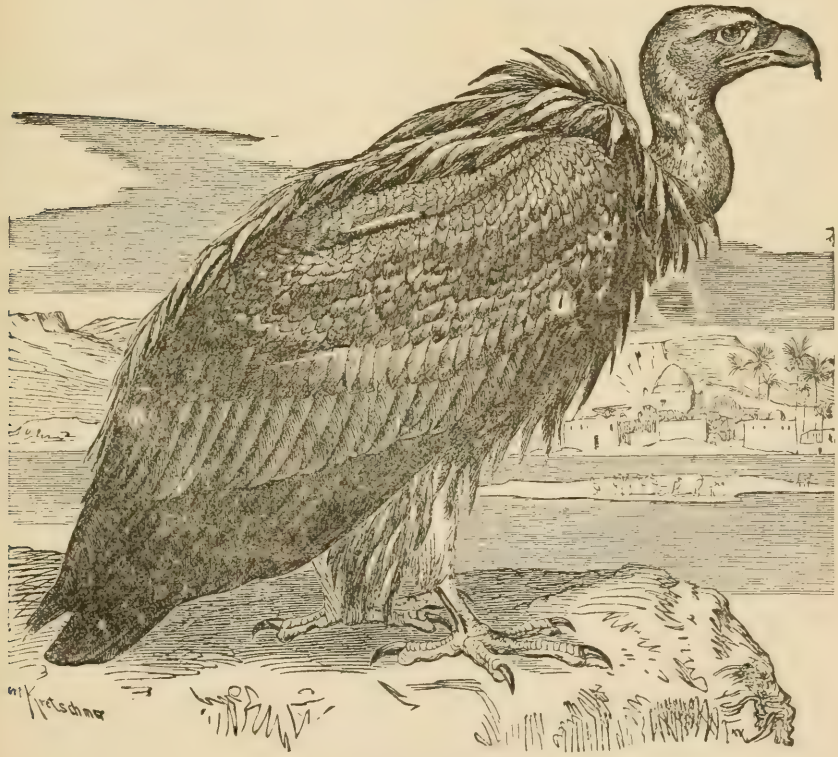
In the country which they inhabit, they seem to supply the place of Wolves; and they are as much feared by the inhabitants, as Wolves are in other climates. In consequence of this, many modes of destroying them are adopted. Sometimes a person, covering himself with the hide of a newly skinned animal, goes out, and so manages it, that the bird is induced to attack him in this disguise; other persons that have hidden themselves, then come forward to his assistance; and then all of them, at once falling on the bird, overpower and kill it. A dead carcass is also sometimes put within a very high enclosure; and when the Condor has satiated himself, and is unable to rise freely, persons are in readiness to subdue him. On these latter occasions the bird is inactive; but in general he possesses a very quick flight, and frequently soars to a height beyond the reach of human vision. Sometimes these birds are caught by means of traps and springes.

It has generally been imagined, that the accounts of this dreadful animal gave rise to the exaggerated description of the bird that makes so conspicuous a figure in the Arabian Tales, under the name of *Roc*. but this seems very improbable, as we have no satisfactory evidence of the Condor having ever been found on the Old Continent. The traditions respecting the Roc originated in a very different kind of bird; a variety of the bearded Eagle, or the well-known Lammergeyer of the Alps, which is occasionally seen among the mountains. The preparations made by these birds for their young are extremely slight; indeed, in most instances the two eggs laid by the female are deposited upon the bare rock. When first hatched, the young are covered with a coat of grey down; they grow but slowly, and remain under the protection of their parents long after they are fully fledged.

THE CARRION VULTURE.

The length of this bird is about four feet and a half, and its general weight between four and five pounds. The head is small, and covered with a red skin, beset only with a few black bristles, which give it a distant resemblance to a turkey. The whole plumage is dusky, mixed with purple and green. The legs are of a dirty flesh color, and the claws black.

In some of the countries bordering upon the torrid zone, these birds haunt the villages and towns in immense multitudes. In Carthagena, they may be seen sitting on the roofs of houses, or even stalking along the streets. They are here of infinite service to the inhabitants, by de-



THE CARRION VULTURE.

vouring that filth which otherwise, by its intolerable stench, would render the climate still more unwholesome than it is. When they find no food in the cities, they seek for it among the cattle of the adjoining pastures. If any animal be unfortunate enough to have a sore on his back, they instantly alight on it, and attack the part affected. The unfortunate beast may in vain attempt to free itself from the gripe of

their talons: even rolling on the ground is of no effect, for the Vultures never quit their hold till they have completed its destruction.

In few creatures are the designs of Providence more clearly developed than in these. Filthy as they are in their manners, their appearance, and their smell, yet is even this filthiness a blessing to mankind. In hot climates, putridity takes place in a few hours after death, what might be the effects of the aggregated stench, if it were not for the exertions of animals of this description! But in some countries they are rendered even of still further importance to mankind, by destroying the eggs of the Alligator, an animal which otherwise must become intolerable by its prodigious increase. They watch the female Crocodile in the act of depositing her eggs in the sand; and no sooner does she retire into the water, than they dart to the spot and feast upon the contents of the eggs.

The resemblance of these birds at a distance, to the Turkey, was the cause of considerable vexation to one of the officers engaged in the expedition round the world under Woodes Rogers. In the island of Lobos, immense numbers of them were seen; and, highly delighted with the prospect of such delicious fare after a long and tedious voyage, the officer would not wait even till the boat could put him ashore, but, with his gun in his hand, leapt overboard and swam to land. Approaching a large collection of the birds, he fired among them and killed several: but when he came to seize his game, he was sadly disappointed in finding that they were not Turkeys, and that their stench was almost insupportable.

The bodies of the Carrion Vultures are extremely offensive to the smell; and they perch at night on rocks or trees, with their wings partly extended, apparently to purify themselves. They soar to a vast height, and have in the air the sailing motions of the Kite. Carrion and filth of almost every description are their favorite food; and, from the acuteness of their scent, they can distinguish prey at an immense distance. They will eat even Snakes, and sometimes seize on live Lambs. When a dead body of considerable size is thrown out, they may be observed coming from all quarters, each wheeling about in gradual descent till he reaches the ground. They are not easily driven from their prey; but, when in the act of devouring it, will suffer persons to approach very near them.

THE AQUILINE, OR EGYPTIAN VULTURE.

The male is entirely white, except the quill-feathers, which are black, edged with hoary. The female is brown, with the same exception of the quill-feathers. The two outermost primaries of each wing in the male, and the four outermost in the female, are entirely black. The head and neck are naked and wrinkled. The eyes are large and black; the beak is black and hooked, having its base covered with a yellow cere; and the talons are large and extended.

These disgusting animals frequent the sterile and sandy country

around the Pyramids. Extensive flocks of them are also found in Cairo, where they feed on offal and dead animals in the streets promiscuously with the Dogs. Every morning and evening they assemble with the Kites, in the square below the castle, in order to receive the alms of fresh meat that have been left to them by the legacies of various wealthy men. By the ancient Egyptians these birds were esteemed sacred; and Herodotus informs us, that it was considered a capital crime to put one of them to death.

Their appearance is as horrid as can be imagined in any animal; and their whole body, from their habits of life, is covered with filth. Notwithstanding this, the inhabitants of the countries where they abound cannot be too thankful to Providence for supplying them with these active scavengers, to cleanse their towns and villages of the filth and putridity which otherwise, under a burning sun, and on lands often inundated by the river which fertilizes them, would fill the atmosphere with the most noxious exhalations.

In Palestine they are of infinite service, in destroying the vast multitudes of Rats and Mice which breed in the fields; and which without their assistance, would devour the whole fruits of the ground. They also frequent the deserts, and there devour the bodies of men and animals which perish in those desolated regions. They every year follow the caravan from Egypt to Mecca, in order to feast upon the flesh of slaughtered beasts, and the carcasses of the camels which die on the journey.

So little are these birds alarmed by the presence of mankind, that they will not even quit the places which they haunt, even when fired at with guns; but after a short flight they immediately return. If one of them be killed, the rest surround and devour it. The Vulturine Caracaro Eagle is probably a Vulture. It is found in Brazil, and feeds on carrion.

THE CAPE VULTURE.

The sloth, the filth, and the voracity of these birds, almost exceed credibility. Whenever they alight on a carcass that they can have liberty to tear at their ease, they gorge themselves in such a manner that they become unable to fly, and even if pursued can only hop along. At all times they are birds of slow flight, and are unable readily to raise themselves from the ground; and when overfed, they are utterly helpless. On the pressure of danger, however, they have the power of ridding themselves of their burden, by vomiting up what they have eaten; and then they fly off with great facility.

They frequent all the country at the Cape of Good Hope; and are so familiar, that they often descend, in great numbers, near the entrance to the shambles of the Cape Town, and there devour the heads, entrails, and other offals, of the animals slaughtered for the market. On the sea-shores they are also very abundant, voraciously devouring all such animal substances as have been thrown upon the coast by the tides

In anatomizing a dead animal, Kolben informs us that these birds exhibit infinite dexterity. They separate the flesh from the bones in such a manner as to leave the skin almost entire. On approaching a body thus destroyed, no person, till he had examined it, could possibly imagine that it was merely bone and skin, deprived entirely of the internal substance. They begin by tearing an opening in the belly, through which they pluck out and greedily devour the entrails: then entering the hollow, they also tear away all the flesh; and this without



KING OF VULTURES.

affecting the external appearance. "It often happens (says this writer) that an ox returning home alone to his stall from the plough, lies down by the way; it is then, if the Vultures perceive it, that they fall upon it with fury, and inevitably devour the unfortunate animal. They sometimes attempt the oxen while grazing in the fields; and, to the number of a hundred or more, make their sudden attack all together."

Ravenous as these animals are, they are capable of existing for a great length of time without food. In the deserts their subsistence is sometimes very precarious. M. Le Vaillant states that in the crop of some that he had killed, he had found nothing but pieces of bark, or a small quantity of clay; in the crop of others he had found only bones; and again, of others, the dung of animals. When urged by hunger, they are frequently known to devour their own species.



A KING VULTURE SEIZING A RATTLESNAKE.

THE KING VULTURE.

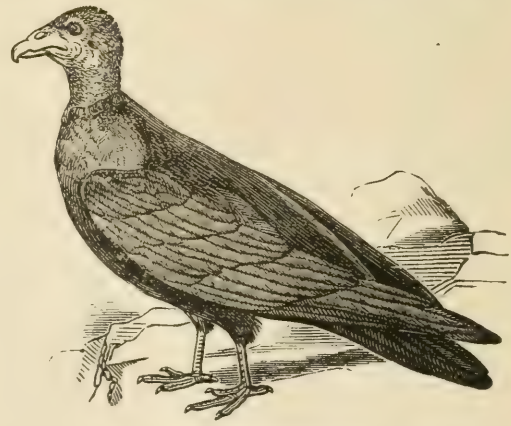
The King Vulture is also a native of South America, seldom if ever being seen north of Florida. Travellers relate that this species keeps the other Vultures under subjection, and does not suffer them to approach a dead animal until he has completely satisfied his own appetite, which is certainly none of the smallest.

Vultures are generally protected by the natives of the countries where they reside on account of their great utility in clearing away the putrid animal matter, which would otherwise be exceedingly injurious as well as disagreeable. The Turkey Buzzard or John Crow (*Cathartes Aura*), or Jamaican Vulture, is protected by a fine of five pounds, inflicted on any one who destroys the bird within a certain distance of the principal towns. Waterton's account of this bird is very interesting, and well worthy of notice. There are many different species of Vultures inhabiting different countries, but their habits as well as their forms are so similar that a detailed description of each is needless.

Waterton mentions that he once observed a pair of these birds sitting on a branch of a tree with a dozen of the common species waiting to feast on a goat a jaguar had killed; though they tolerated the others' company they guarded their royal privileges with jealous care.

THE TURKEY VULTURE.

The Turkey Vulture is about two and a half feet in length, and six in breadth. Eyes dark or reddish-hazel. The head and neck for about an inch and a half below the ears, furnished with a reddish wrinkled skin, and tints of blue sprinkled with short black hairs. From the hind-head to the neck-feathers the space is covered with a black down. The forepart of the neck is bare to the breast-bone. The plumage of the neck is large and tumid, and, with that of the back and shoulders, nearly black; almost all the rest of the body is of the same color, in parts inclining to brown. Third primary feather longest. The wings extend to the end of the tail. The upper plumage is generally glossed with green and bronze, having purplish

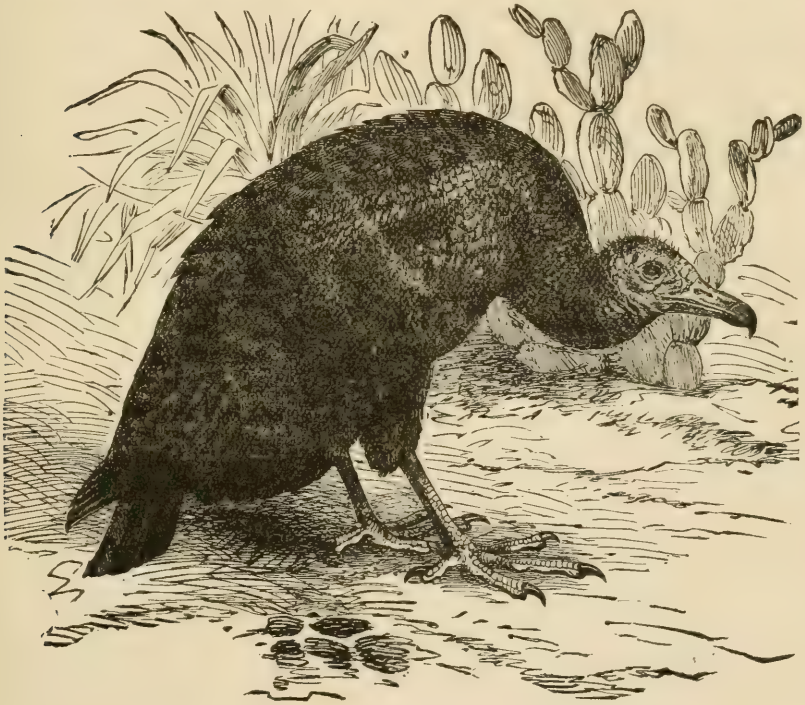


TURKEY VULTURE OR BUZZARD.

reflections. Legs feathered to the knees; the feet somewhat webbed. The bill nearly white, often tipped with bright olive green. Weight from four and a half to five pounds.

THE URUBU.

The Urubu is a species of American Vulture, one of many varieties inhabiting the western continent. It is distinguished by its short, thick beak, graduated tail and low tarsi. The bare parts of the neck are of a flesh color, the top of the head is violet, the entire body, wings and



THE URUBU.

tail are brownest black, and gleam with a metallic lustre. The length of this species is about twenty-two and its breadth sixty-three inches. This bird lives for the most part in the vicinity of the coast. So highly do the people value the services rendered by these Vultures that in some districts it is made a punishable offence to kill them. They are gregarious, peaceable and harmless, never offering any violence to any living animal, or like the plunderers of the Falco tribe, depriving the husbandman of his stock. Hence, though in consequence of their filthy habits they are not beloved, yet they are respected, and protected by law for their usefulness. They generally roost in flocks on the limbs of

large trees, and they may be seen on a summer morning spreading out their wings to the rising sun, and remaining in that posture for a considerable time.

OF THE FALCON OR EAGLE TRIBE.



The bill is hooked; and is furnished at the base with a naked membranaceous skin, called *cere*. The head and neck are thickly beset with feathers. The nostrils are small, and placed in the cere; and the tongue is broad, fleshy, and generally cleft at the end. The legs and feet are strong, muscular and scaly; and the large, hooked, and very sharp claws, are well calculated for the predacious habits of the animals. The middle toe is connected to the outermost by a strong membrane, and the claw of the outer toe is smaller than that of any of the others.

This tribe differs from the last principally in the animals having their bill and claws much more hooked and sharp; in having the head and neck in general thickly covered with feathers, instead of being naked, or covered only with down; and also in their usually killing their prey and eating it while fresh. The exuviæ and bones of their food they always emit at the mouth, in the form of round pellets.

This, as well as the last, is an excessively rapacious tribe of birds. They prey altogether on animal food; yet they seldom feed on carrion, except when driven to it by necessity. They are able to sustain hunger for a very great length of time; often taking in as much food at once, as will last them for several days without a fresh supply. Many of these species eat fish, and others are content to subsist on snakes and reptiles.

They never associate; and, except during the breeding season, even two of them are seldom seen together. They are extremely quick sighted, and soar to amazing heights in the air. When they discern their prey, they dart upon it with the swiftness of an arrow: and their strength is so great, that some of them have been known to carry to their offspring a load nearly as heavy as themselves, and from a distance of forty miles and upwards. Most of them build their nests in lofty and inaccessible places; but a few of the species form them on the ground. In general the females are much larger than the males; for the purpose, as some persons have conjectured, of more easily providing food for their offspring.

About a hundred and forty different species have been discovered, of which upwards of twenty are natives of Great Britain; but, from the extreme difference in appearance, between many of the males and females of the same species it is sometimes a difficult task to ascertain them.

THE SECRETARY FALCON.

This bird, when standing erect, measures about three feet from the top of the head to the ground. The bill is black, sharp, and crooked, like that of an Eagle. The cere is white; and round the eyes there is a place bare of feathers, and of a deep orange color. The upper eyelids are beset with strong bristles, like eye-lashes. The general color of the plumage is a bluish ash color; and the ends of the wings, the thighs, and vent, are blackish. The tail is somewhat ash-colored, except at the end, which, for above an inch, is black, and then tipped with white: the two middle feathers are twice as long as any of the rest. The legs are long, brown, and stouter than those of a Heron; the claws are shortish, but crooked, and of a black color.

The Secretary Falcon is a native of the interior parts of Africa, Asia, and the Philippine Islands.

In its general form this bird resembles, in some degree, both the Eagle and the Crane; having its head shaped like that of the former, and its body somewhat like that of the latter. From the back of the head spring several long dark-colored feathers, that hang loose behind like a pendant crest, which the bird can erect or depress at pleasure. "The Dutch (says M. Le Vaillant) gave to it the name of Secretary, on account of the bunch of quills behind its head: for in Holland, clerks, when interrupted in their writing, stick their pen in their hair behind their right ear; and to this the tuft of the bird was thought to bear some resemblance."

The Hottentots at the Cape of Good Hope distinguished this bird by a name that signifies the Serpent-eater; and it would almost seem that nature had principally destined it for the purpose of confining within due bounds the race of Serpents, which is very extensive in all the countries that this bird inhabits.



SECRETARY KILLING A SNAKE.

The mode in which it seizes these dangerous creatures is very peculiar. When it approaches them, it is always careful to carry the point of one of its wings forward, in order to parry off their venomous bites; sometimes it finds an opportunity of spurning and treading upon its antagonist, or else of taking him on its pinions and throwing him into the air. When, by this proceeding, it has at length wearied him out, and rendered him almost senseless, it kills and swallows him at leisure without danger.

M. Le Vaillant tells us, that he was witness to an engagement between a Secretary Falcon and a Serpent. The battle was obstinate, and was conducted with equal address on both sides. But the Serpent at length feeling the inferiority of his strength, employed, in his attempt to regain his hole, all that cunning which is attributed to the tribe; while the Bird, apparently guessing his design, stopped him on a sudden and cut off his retreat, by placing herself before him at a

single leap. On whatever side the reptile endeavored to make his escape, his enemy still appeared before him. Then, uniting at once both bravery and cunning, the serpent boldly erected himself to intimidate the Bird, and, hissing dreadfully, displayed his menacing throat, inflamed eyes, and a head swollen with rage and venom. "Sometimes this threatening appearance produced a momentary suspension of hostilities; but the Bird soon returned to the charge, and covering her body with one of her wings as a buckler, struck her enemy with the bony protuberance of the other. I saw him at last stagger and fall: the conqueror then fell upon him to dispatch him, and, with one stroke of her beak, laid open his skull."

At this instant M. Le Vaillant fired at and killed the bird. In her craw he found, on dissection, eleven tolerably large Lizzards; three Serpents, each as long as his arm; eleven small Tortoises, most of which were about two inches in diameter; and a number of Locusts and other insects, several of them sufficiently whole to be worth preserving and adding to his collection. He observed, too, that, in addition to this mass of food, the craw contained a sort of ball, as large as the head of a Goose, formed of the vertebræ of Serpents and Lizards; shells of Tortoises; and wings, claws, and shields, of different kinds of Beetles.

Dr. Solander says, that he has seen one of these birds take up a Snake, a small Tortoise, or other reptile, in its claw, and dash it with so much violence against the ground, that the creature immediately died; if, however, this did not happen to be the case, he tells us that the operation was repeated till the victim was killed; after which it was eaten.

The Secretary is easily tamed; and when domesticated, will eat any kind of food, either dressed or raw. If well fed, it not only lives with poultry on amicable terms, but, when it sees any of them quarrelling, it will even run to part the combatants and restore order. This bird, it is true, if pinched with hunger, will devour, without scruple, the ducklings and chickens; but this abuse of confidence, if it may be so called, is the effect of severe hunger, and the pure and simple exercise of that necessity which rigorously devotes one half of the living creation to satisfy the appetite of the rest.

Tame Secretaries were seen by M. Le Vaillant in several of the plantations of the Cape. He says that they commonly lay two or three white eggs, nearly as large as those of a goose. The young-ones remain a great while in the nest; because, from their legs being long and slender, they cannot easily support themselves.

However shrewd and cunning this bird may be in its general conduct, yet M. de Buffon seems to have attributed to it a much greater degree of intelligence than it really possesses:—"When a painter (says he, quoting a letter of the viscount de Querhoent) was employed in drawing one of the Secretary Falcons, it approached him, looked attentively upon his paper, stretched out its neck, and erected the feathers of its head, as if admiring its own figure. It often came with its wings raised, and its head projected, to observe what he was doing. It also thus approached me two or three times, when I was sitting at a table, in its hut, in order to describe it." This stretching out of its

head, and erection of its crest, seem, however, to have arisen from nothing more than that love which almost all domesticated birds evince of having their heads scratched. And these birds, when rendered familiar, are well known to approach every person who comes near them, and to stretch out their necks by way of making known this desire.

This singular bird has not long been known, even at the Cape: but, when we consider its sociable and familiar disposition, we are disposed to think that it would be advisable to multiply the species, particularly in our colonies; for it is hardy enough to endure even European climates, where it might be serviceable in destroying not only pernicious reptiles, but Rats and Mice.

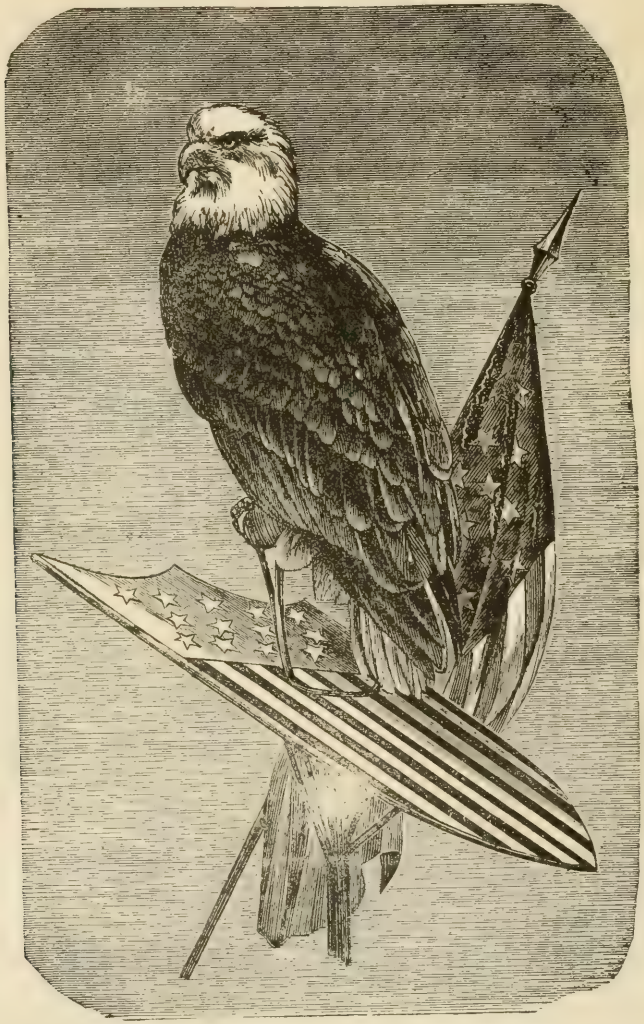
The Secretary Falcons make, with twigs, a flat nest, full three feet in diameter, and line it with wool and feathers. This is usually formed in some high tuft of trees; and is often so well concealed, as not easily to be discovered even by the most scrutinizing eye. It is a very singular circumstance, that in their contests these birds always strike forward with their legs; and not, like all others, backward.

THE WASHINGTON EAGLE.

The Washington Eagle, says Nuttall, bold and vigorous, disdains the piratical habits of the Bald Eagle, and invariably obtains his own sustenance without molesting the Osprey. The circles he describes in his flight are wider than those of the White-headed Eagle; he also flies nearer to the land or the surface of the water; and when about to dive for his prey, he descends in circuitous, spiral rounds, as if to check the retreat of the fish, on which he darts only when within the distance of a few yards. When his prey is obtained, he flies out at a low elevation to a considerable distance to enjoy his repast at leasure. The quantity of food consumed by this enormous bird is very great, according to the account of those who have had them in confinement. Mr. Audubon's male bird weighed fourteen and a half pounds avoirdupois.



One of the chief attractions in Agricultural Hall, during the Centennial Exhibition, was the famous "Old Abe," the veteran War Eagle of Wisconsin, the hero of no less than thirty-six battles and skirmishes, during the late war. There was always a crowd around him, as he sat perched on a national escutcheon, supported horizontally on a pole, the



"OLD ABE," THE LIVE WAR EAGLE OF WISCONSIN.
"NEVER LOST A BATTLE."

services of this celebrated Eagle having gained him a national reputation. Among all the incidents of our memorable war, there are few more remarkable than that an Eagle, the emblem of our country, should follow a regiment through all the vicissitudes of a three years' service in the field, always at the front, and never witnessing defeat.

A brief biography of this remarkable bird will not be out of place here, and we glean the following facts from an exceedingly interesting and complete history, written by Mr. J. O. Barrett, and published by Messrs. Atwood & Culver, Madison, Wisconsin.

The bird was caught when only about two months old, by an Indian called A-ge-mah-we-ge-zhig, or Chief Sky, a son of Ah-mouse, chief of a tribe of Chippewa Indians, who took him from a nest on a pine tree, near the mouth of the Flambeau. This Indian sold him to a Mr. Daniel McCann for a bushel of corn, and presented by a Mr. Jeffers to a company organizing for the Eighth Wisconsin Infantry. The Eagle was duly sworn into the United States service by putting around his neck red, white and blue ribbons, and on his breast a rosette of the same colors. Borne upon a shield, at the head of the company called the "Chippewa Eagles," he accompanied them to the front, and was named "Old Abe" in honor of Abraham Lincoln. With them he shared all the dangers and privations of a three years' campaign, and returned home with the remnant of his regiment a battle-scarred veteran, having been wounded on two occasions, once at the battle of Corinth, October 3d, 1862, and again at the assault on Vicksburg. The most wonderful accounts are given of his behavior during the heat of battle, how he grew wild with excitement at the clash of arms, flapping his wings and uttering startling screams. "The fiercer and louder the storm of battle, the fiercer, louder and wilder were his screams." It was not surprising that his presence at the head of the regiment should have created such enthusiasm as it did, or that "Old Abe" has acquired such an enviable notoriety.

When the regiment returned to Madison, September 22d, 1864, a grand reception was given them, in which, however, the main attention was riveted on "Old Abe," who was *the* hero of the hour. He was on that occasion presented by the regiment, with appropriate ceremonies, to the State of Wisconsin, and accepted, on behalf of the State, by Governor Lewis, who promised that he should be well cared for at the capitol, where he would be preserved to invoke inspiring memories of the brave regiment who had carried him with such honor to themselves and the State. He has a pleasant and well-lighted room in the basement of the State capitol, also the freedom of an adjoining room, and in the summer enjoys the capitol park under the care of his attendant.

He is brought out and paraded on occasions of public military exercises and reviews, and always excites attention and enthusiasm. He has also made himself useful in other ways. Advantage was taken of his celebrity to put him on exhibition at several Sanitary Fairs that were held in the West, for the benefit of sick and wounded soldiers, and very large sums were realized by the sale of his history, photographs and pictures. At the Chicago Sanitary Fair, in the winter of 1864, no less a sum than $16,000 was raised entirely by this means.

The Wisconsin Legislature of 1876, by a joint resolution of Assembly and Senate, authorized Governor H. Ludington to have "Old Abe" borne to the Centennial Exhibition at Philadelphia by some veteran soldier of his old regiment, to show to the assembled thousands from all parts of the world how happily chosen was our national emblem.

THE BEARDED EAGLE, OR LAMMER-GEYER.

The beak is of a purplish flesh-color, and hooked only at the point the head and neck are covered with feathers. Beneath the throat hangs a kind of beard, composed of very narrow feathers, like hairs. The legs are covered with feathers quite to the toes, which are yellow: the claws are black. The body is blackish-brown above; and the under parts are white, with a tinge of brown.



LAMMER-GEYER

The Bearded Eagles, of which so many fabulous tales have been related, are inhabitants of the highest parts of the great chain of the Alps that separates Switzerland from Italy, They are frequently seen of immense size. One that was caught in the canton of Glarus, measured from the tip of its beak to the extremity of its tail, nearly seven feet, and eight feet and a half from tip to tip of its wings; but some have been shot that were much larger.

These birds form their nests in the clefts of rocks, inaccessible to man; and usually produce three or four young-ones at a time. They subsist on alpine animals, such as Chamois, white Hares, Marmots, Kids, and particularly Lambs. It is from their devouring the latter, that they are called, by the Swiss peasants, *Lammer-geyer*, or Lamb Vultures.* The Bearded Eagles seldom appear except in small parties, usually consisting of the two old birds and their young-ones.

If common report may be credited, this rapacious bird does not confine its assaults to the brute creation, but sometimes attacks and succeeds in carrying off young children. Gesner, on the authority of Fabricius, says, respecting it, that some peasants between Meissen and Brisa, in Germany, losing every day some of their cattle, which they sought for in the forests in vain, observed by chance a very large nest resting on three oaks, constructed with sticks and branches of trees, and as wide as the body of a cart. They found in this nest three young birds, already so large that their wings extended seven ells. Their legs were as thick as those of a Lion; and their claws the size of a man's fingers. In the nest were found several skins of Calves and Sheep.

It appears to have been from one of the two varieties of this bird that are sometimes seen in Persia and other eastern countries, rather than the Condor, as is generally supposed, that the fabulous stories of the *Roc* of the Arabian Tales originated; since the latter is confined to the wild districts of South America, and has never been ascertained to have visited the old continent.

One of these varieties also it is that Mr. Bruce describes as having

* It is, however, to be remarked that the Swiss do not confine the appellation of Lammer-geyer to this species, but sometimes extend it to other large birds of prey



LAMMER-GEYER.

seen on the highest part of the mountain of Lamalmon, not far from Gondar, the capital of Abyssinia. He says, that on account of the tuft of hair growing beneath its beak, the inhabitants call it *Abou Duch'n*, or Father Long-beard. Mr. Bruce supposed it to be not only one of the largest of the Eagle kind, but one of the largest birds in the creation. From wing to wing it measured eight feet four inches: and from the tip of its tail to the point of its beak, when dead, four feet seven inches. It weighed twenty-two pounds, and was very full of flesh. Its legs were short, but the thighs extremely muscular. Its eyes were remarkably small, the aperture being scarcely half an inch across. The crown of the head was bald, as was also the front, where the bill and skull joined.

"This noble bird (says this celebrated traveller) was not an object of any chase or pursuit, nor stood in need of any stratagem to bring him within our reach. Upon the highest top of the mountain Lamalmon, while my servants were refreshing themselves from that toilsome, rugged ascent, and enjoying the pleasures of a most delightful climate eating their dinner in the outer air, with several large dishes of boiled goat's flesh before them, this enemy, as he turned out to be to them suddenly appeared; he did not stoop rapidly from a height, but came flying slowly along the ground, and sat down close to the meat, within the ring the men had made round it. A great shout, or rather cry of distress, called me to the place. I saw the Eagle stand for a minute, as if to recollect himself; while the servants ran for their lances and shields. I walked up as nearly to him as I had time to do. His attention was fixed upon the flesh. I saw him put his foot into the pan, where there was a large piece, in water, prepared for boiling; but finding the smart, which he had not expected, he withdrew it, and forsook the piece that he held.

"There were two large pieces, a leg and a shoulder, lying upon a wooden platter: into these he thrust both his claws, and carried them off; but I thought he still looked wistfully at the large piece which remained in the warm water. Away he went slowly along the ground, as he had come. The face of the cliff over which criminals are thrown, took him from our sight. The Mahometans that drove the Asses, were much alarmed, and assured me of his return. My servants, on the other hand, very unwillingly expected him, and thought he had already taken more than his share.

"As I had myself a desire of more intimate acquaintance with this Bird, I loaded a rifle-gun with ball, and sat down close to the platter by the meat. It was not many minutes before he came, and a prodigious shout was raised by my attendants, 'He is coming, he is coming,' enough to have dismayed a less courageous animal. Whether he was not quite so hungry as at his first visit, or suspected something from my appearance, I know not; but he made a short turn, and sat down about ten yards from me, the pan with the meat being between me and him. As the field was clear before me, and I did not know but his next move might bring him opposite to some of my people, so that he might actually get the rest of the meat and make off, I shot him with the ball through the middle of his body

about two inches below the wing, so that he lay down upon the grass without a single flutter.

"Upon laying hold of his monstrous carcass, I was not a little surprised at seeing my hands covered and tinged with yellow powder or dust. On turning him upon his belly, and examining the feathers of his back, they also produced a dust, the color of the feathers there. This dust was not in small quantites; for, upon striking the breast, the yellow powder flew in full greater quantity than from a hair-dresser's powder puff. The feathers of the belly and breast which were of a gold color, did not appear to have any thing extraordinary in their formation; but the large feathers in the shoulder and wings seemed apparently to be fine tubes, which, upon pressure, scattered this dust upon the finer part of the feather; but this was brown, the color of the feathers of the back. Upon the side of the wing, the ribs, or hard part of the feathers, seemed to be bare, as if worn; or, I rather think, were renewing themselves, having before failed in their functions.

"What is the reason of this extraordinary provision of nature, it is not in my power to determine. As it is an unusual one, it is probably meant for a defence against the climate, in favor of birds which live in those almost inaccessible heights of a country doomed, even in its lowest parts, to several month's excessive rain."

THE IMPERIAL EAGLE.

This is the largest species of Eagle known, measuring three feet and a half from the tip of the bill to the end of the tail; and to it may be referred all the accounts of the ancients respecting the strength, courage, and magnanimity of these birds. Its color above is rufous gray, barred with black, the black prevailing most on the wings; the head is strongly crested with long gray feathers, the two middle ones being five inches long; the tail is gray, barred and spotted with black, and tipped with rufous: the under parts of the bird are pale cinereous, very soft and downy; the beak and cere black; the feet and legs yellow. It is a native of South America, inhabiting the deep recesses of the forest; and has the reputation of being extremely bold and ferocious.

THE HARPY EAGLE.

It has been correctly observed by Mr. Selby, that the members of the aquiline division of the Raptorial order do not possess the same facility of pursuing their prey upon the wing which we see in the Falcons and Hawks; for though their flight is very powerful, they are not capable of the rapid evolutions that attend the aerial attacks of the above-named groups, in consequence of which their prey is mostly pounced upon the ground. The shortness of the wings of the Harpy Eagle, when compared with those of the Golden Eagle of Europe, and their rounded form and breadth, though well adapting them for a continued steady flight, render them less efficient as organs



HARPY EAGLE AND PREY.

of rapid and sudden aerial evolutions than those of the latter; but as it inhabits the woods, and does not prey upon birds, but animal incapable of saving themselves by flight, its powers of wing (or rather the modification of powers) are in accordance with the circumstances as to food and locality under which it is placed. If the Harpy Eagle soars not aloft, hovering over plains and mountains, it threads the woods, it skims amidst the trees, and marks the Sloth suspended on the branch, or the Monkey in unsuspicious security, and with unerring aim strikes its defenceless victims. Mr. Selby commenting on the fierceness of a pair of Golden Eagles in his po-

session and their readiness to attack every one indiscriminately, observes that when living prey (as Hares, Rabbits, or Cats) are thrown to them, the animal is "instantly pounced on by a stroke behind the head and another about the region of the heart, the bill appearing never to be used but for the purpose of tearing up the prey when dead." It is precisely in this manner that the Harpy Eagle deals with his victims; death seems the work of an instant; the strongest Cat, powerless in his grasp, is clutched, and expires. Nor will this surprise any one who has contemplated the power seated in the talons of this bird; strong as are the talons of the Golden Eagle, great as is the muscular development of its limbs, and formidable as are its claws, they seem almost trifling compared with those of the Harpy Eagle. In the museum of the Zoological Society are skeletons of both these birds, which it is interesting to compare together. The thickness of the bones of the limbs in the latter, and especially of the tarsus, which is more than double that of the Golden Eagle, and the enormous size of the talons, are sufficient to convince the observer of the ease with which, when living, the fierce bird would bury its sharp-hooked claws in the vitals of its prey, and how vain resistance when the fatal grasp was taken. In its native regions the Harpy Eagle is said to be by no means common; were it so, the destruction occasioned by its presence would, it might be naturally expected, preponderate over the renovation of the species which constitute its habitual food, and the balance which nature has established between the destroyed and the destroying, the sanguinary and their victims, be thus disarranged. No doubt that, as is the case with all carnivorous animals, its numerical ratio in a given space is proportionate to that of the animals on which it is destined habitually to feed. Where the Sloth is most abundant, there will most abound the Harpy Eagle.

The general color of this noble bird is slate black; the head is light slate-gray, passing into dusky-black on the crest; the under parts are white, with a broad band of dark slate color across the chest. The tail is barred with black and slate color. The beak and claws are black; the tarsi yellow.

THE SEA EAGLE

In comparison with the flight of the True Eagle, the movements of the Haliaëta in the air are slow and heavy; upon the ground, however, it moves with great facility, and can dive to a certain depth. In the development of its senses it is not inferior to its more noble relatives, but, unlike them, combines so much cruelty and rapacity with its courage as to deprive its disposition of that majesty popularly attributed to the King of Birds. The breeding season commences about March, and though each male has but one mate during its entire life, many and frequent are the battles that arise about the possession of these often very hardly-earned partners. Two male Eagles will fight almost incessantly, falling upon each other with beak and claws, and rolling upon the ground until their feathers fly in all directions and blood flows.

THE GOLDEN EAGLE.

The Golden Eagle is a large bird, weighing twelve or fourteen pounds; measuring in length three feet, and from tip to tip of his wings seven feet and a half. The bill is deep blue, and the cere yellow. The head and neck are of a dark brown, bordered with tawny: the hind part of the head is of a bright rust-color, and the rest of the body brown. The tail is blotched with ash-color. The legs are yellow, and feathered to the toes, which are scaly: the claws are remarkably large, the middle one being two inches in length.



GOLDEN EAGLE.

This bird is a native of Europe, and even of some of the more mountainous parts of Great Britain.

This Eagle has generally been considered by mankind, to hold the same fabulous or imaginary dominion over the birds, which has been attributed to the Lion over quadrupeds. M. de Buffon, adopting the idea, is also of opinion, that the Eagle and the Lion have many points of resemblance, both physical and moral. "Magnanimity (he says) is equally conspicuous in both; they despise the small animals, and disregard their insults. It is only after a series of provocations, after being teased with the noisy or harsh notes of the Raven or Magpie, that the Eagle determines to punish the temerity or the insolence of these birds with death. Besides, both disdain the possession of that property which is not the fruit of their own industry; rejecting with contempt the prey which is not procured by their own exertions. Both are remarkable for their temperance. This species seldom devours the whole of his game, but, like the Lion, leaves the fragments

and offals to other animals. Though famished for want of prey, he disdains to feed upon carrion.

"Like the Lion, also, he is solitary; the inhabitant of a desert, over which he reigns supreme, excluding all the other birds from his silent domain. It is perhaps even more uncommon to see two pairs of Eagles in the same tract of mountain, than two families of Lions in the same part of the forest. They separate from each other at such wide intervals, as to afford ample range for subsistence; and esteem the value and extent of their dominion to consist in the abundance of prey with which it is replenished.

"The eyes of the Eagle have the glare of those of the Lion, and are nearly of the same color; the claws are of the same shape; the organs of sound are equally powerful, and the cry equally terrible.* Destined, both of them, for war and plunder, they are equally fierce, bold, and intractable. It is impossible to tame them, unless they be caught when in their infancy. It requires much patience and art to train a young Eagle to the chase; and after he has attained his proper age and strength, his caprices and momentary impulses of passion, are sufficient to create suspicions and fears in his master. Authors inform us, that the Eagle was anciently used in the East for Falconry; but this practice is now laid aside. He is too heavy to be carried on the hand: nor is he ever rendered so tame or so gentle, as to remove all suspicions of danger. His bill and claws are crooked and formidable: his figure corresponds with his instinct: his body is robust; his legs and wings are strong; his flesh is hard; his bones are firm; his feathers stiff; his attitude bold and erect; his movements quick; his flight rapid. He rises higher in the air than any other of the winged race; and hence he was termed by the ancients the *Celestial Bird*, and was regarded in their mythology as the messenger of Jupiter. He can distinguish objects at an immense distance; but his power of smell is inferior to that of the Vulture. By means of his exquisite sight, he pursues his prey; and, when he has seized it he checks his flight, and places it upon the ground to examine its weight, before he carries it off. Though his wings are vigorous; yet, his legs being stiff, it is with difficulty he can rise, especially if he be loaded. He is able to bear away Geese and Cranes: he also carries off Hares, young Lambs, and Kids. When he attacks Fawns or Calves, he instantly gluts himself with their blood and flesh, and afterwards transports their mangled carcasses to his nest, or *aery*."

Formed for war, these Birds are solitary and unsociable. They are also fierce, but not implacable; and, though not easily tamed, are capable of great docility. They will not, however, bear the least harsh usage without endevoring to resent it. A gentleman who lived in the south of Scotland, had, not many years ago, a tame Eagle. This Bird the keeper one day injudiciously lashed with a horsewhip. About a week afterwards the man chanced to stoop within reach

* The voice of the Lion and Eagle, notwithstanding this assertion of M. de Buffon, will not bear comparison. The one is a deep and dreadful bass; and the other a piercing treble, altogether destitute of majesty.

of its chain; when, recollecting the insult, the enraged animal flew in his face with so much fury and violence, that he was terribly wounded, but was driven so far back by the blow, as to be out of further danger. The screams of the Eagle alarmed the family; who found the man lying at some distance, covered with blood, and equally stunned with the fright and the fall. The Bird was still pacing and screaming in a manner not less threatening than majestic; and, shortly, afterwards he broke his chain and escaped.

The Golden Eagles build their nests on elevated rocks, ruinous and solitary castles and towers, and other sequestered places. The nest is quite flat; and not hollow, like the nests of other birds. The male and female commonly place it between two rocks, in a dry and inaccessible situation. The same nest, it is said, serves the Eagle during life. Its form resembles that of a floor. Its basis consists of sticks about five or six feet in length, which are supported at each end; and these are covered with several layers of rushes and heath.

An Eagle's nest which was, some years ago, found in the Peak of Derbyshire, was made of great sticks, and one end of it rested on the edge of a rock, the other on a birch-tree. Upon these was a layer of rushes, over them a layer of heath, and on the heath rushes again; upon which lay one young Eagle, and an addle egg; and by them a Lamb, a Hare, and three heath pouts. The nest was about two yards square, and had no hollow in it.

The females never lay more than two or three eggs. These they hatch in thirty days. They feed their young ones with the slain carcasses of such small animals as come in their way; and, though they are at all times formidable, they are particularly so while bringing up their offspring.

It is said that once during a summer of famine, a countryman got a comfortable subsistence for his family out of an Eagle's nest. He protracted the assiduity of the old birds beyond their usual time, by clipping the wings, and thus retarding the flight, of their young ones; and tying them so as to increase their cries, which are always found to increase the dispatch of the parents in supplying their wants. It was fortunate for him that the old ones did not detect the plunderer, otherwise their resentment might have proved fatal. A peasant, not many years ago, resolved to rob an Eagle's nest, which he knew to be built on a small island in the beautiful lake of Killarney. He stripped himself for this purpose, and swam over when the old birds were gone: but, in his return, while yet up to the chin in water, the parents, coming home, and missing their offspring, quickly fell on the plunderer, and killed him on the spot.

Several instances have been recorded of children being seized and carried off to their nests by Eagles. In the year 1737, in the parish of Norderhougs, in Norway, a boy somewhat more than two years old, was running from the house to his parents, who were at work in the fields at no great distance, when an Eagle pounced upon and flew off with him, in their sight. It was with bitterest anguish they beheld their child dragged away, but all their screams and efforts to prevent it were in vain. Anderson, in his History of Iceland, says, that in that

island children of four or five years of age have been sometimes taken away by Eagles; and Ray relates, that in one of the Orkneys, a child of a year old was seized in the talons of an Eagle, and carried above four miles to its nest. The mother, knowing the place, pursued the bird, found her child in the nest, and took it away unhurt.

The form of the Golden Eagle is extremely muscular; but their chief strength lies in their beak, their talons, and their wings. There is scarcely any quadruped a match for them; as they are capable of giving the most terrible annoyance, without much danger to themselves One flap of their wing has been known to strike a man dead.

These birds are remarkable for longevity, and for their power of sustaining abstinence from food for a great length of time. One that died at Vienna, had been in confinement above a hundred years; and one that was in the possession of a gentleman of Conway, in Caernarvonshire was, from the neglect of his servants, kept for three weeks without any sustenance.

THE OSPREY, OR FISHING EAGLE.

The length, from the point of the beak to the end of the tail, is about two feet, and the expanded wings measure somewhat more than five feet. The wings when closed, reach beyond the end of the tail. The head is small; and is black or brown, variegated with white at the top. The upper parts of the body, and the whole of the tail, are brown, and the belly is white. It is a singular circumstance in this bird, that the outer toe turns easily backward, so as on occasion to have the toes two forward and two backward, and it has a much larger claw than the inner one. This and the peculiar roughness of the whole foot underneath, are well adapted for the securing of its prey.



OSPREY.

The Osprey frequents large rivers, lakes, and the sea-shore both of Europe and America. In the latter country, particularly, it often affords amusement to strangers. During the spring and summer,

months, this bird is frequently seen hovering over the rivers, or resting on the wing for several minutes at a time, without the least visible change of place. It then suddenly darts down, and plunges into the water, whence it seldom rises again without a fish in its talons. When it rises into the air, it immediately shakes off the water, which it throws around like a mist, and pursues its way towards the woods. The Bald Eagle, which, on these occasions, is generally upon the watch, instantly pursues, and, if it can overtake, endeavors to soar above it. The Osprey, solicitous for its own safety, drops the fish in alarm; the Eagle immediately pounces at this prey, and never fails to catch it before it reaches the water, leaving the hawk to begin his work afresh.



OSPREY ROBBED OF ITS PREY BY THE EAGLE.

It is somewhat remarkable, that whenever the Osprey catches a fish, it always makes a loud screaming noise; which the Eagle, if within hearing, never fails to take as a signal. Sometimes it happens, that, if the Osprey be tolerably large and strong, it will contend with the Eagle for its rightful property; and, though generally conquered in the end, a contest of this sort has been sustained for upwards of half an hour.

THE BLACK, OR COMMON EAGLE.

Its length is two feet ten inches; the bill is horn-colored, and the cere reddish. The general color of the plumage is blackish; and the head and upper parts of the neck, are mixed with yellow. The lower half of the tail is white, with blackish spots; the other half blackish; The legs are covered with dirty white feathers; the toes are yellow, and the claws black.



BLACK EAGLES.

Their aeries are usually formed amongst the branches of the highest trees; and one of them, which was seen in the mountains of Auvergne, is described to have measured more than five superficial feet.

An Eagle of this species, which was in the possession of the Abbè Spallanzani, was so powerful, as to be able to kill Dogs that were much larger than itself. When the Abbé forced one of these anima

into the apartment where the Eagle was kept, the Bird immediately ruffled the feathers on its head and neck, cast a dreadful look at its victim, and, taking a short flight, immediately alighted on his back. It held the neck firmly with one foot, by which the Dog was prevented from turning his head to bite, and with the other grasped one of his flanks, at the same time driving its talons into the body; and in this attitude it continued, till the Dog expired with fruitless outcries and efforts. The beak, which had been hitherto unemployed, was now used for making a small hole in the skin: this was gradually enlarged; and from this, the Bird began to tear away and devour the flesh, and went on till he was satisfied.

Notwithstanding its ferocity in attacking animals, this Eagle never gave any molestation to man. Its owner, who constantly fed it, could safely enter the apartment where the bird was kept, and could behold these assaults without dread or apprehension; nor was the Eagle prevented from attacking the living prey he offered to it, or rendered shy by his presence. In general, when it had flesh sufficient, it made only one meal a day. The Abbé found, by weighing what it ate, that thirty ounces of flesh, one day with another, were fully sufficient for it.

These birds are found in all quarters of the world; and in hot as well as cold climates. Poiret speaks of having encountered them in the plains of Barbary. They are also very common in several parts of Europe, in Persia, and Arabia; and also in most of the mountainous districts of America.

THE WHITE-HEADED EAGLE, OR BALD EAGLE.



WHITE-HEADED EAGLE.

The White headed Eagle, or Bald Eagle, as it is called by Wilson, inhabits most parts of America, and especially frequents the cataract of Niagara. It is very accommodating in its appetite, and preys indiscriminately on Lambs, Pigs, Swans and the Fish which, as related above, it takes away from the unfortunate Osprey. Sometimes it can take Fish honorably for itself in shallow water, by wading

as far as it can and snatching up the fish with its beak. Audubon gives a splendid description of the chase of a swan by an Eagle, but want of space prevents insertion.



Like the Golden Eagle, this bird lives constantly with its mate, and hunts in company. It lays from two to four eggs, of a dull white color in a huge nest placed in a tall tree.

The claws of this bird are grooved beneath, and the hind claw is the longest. The feet are half-feathered, and the fourth primary feather of the wing is the longest. When full grown, the general color of the bird is a deep, brownish black, but its head, neck, tail, and upper tail-coverts are white.

THE COMMON BUZZARD.

The Buzzard is about twenty inches in length, and four feet and a half in breadth. Its bill is lead-colored. The upper parts of the body are dusky: and the lower pale, varied with brown. The wings and tail are marked with bars of a darker hue. The tail is grayish beneath nd tipped with dusky white. The legs are yellowish, and the claws black.

This well-known bird is of a sedentary and indolent disposition; it will frequently continue perched for many hours successively upon a tree or eminence, from which it darts upon such prey as come within its reach. It feeds on birds, small quadrupeds, reptiles and insects. Though possessed of strength, agility, and weapons to defend itself, it is cowardly, inactive, and slothful. It will fly from a Sparrow-hawk; and, when overtaken, will suffer itself to be beaten, and even brought to the ground, without resistance.

There are few birds of the hawk species more common in this country, than the buzzard. It breeds in large woods; and usually builds in an old crow's nest, which it enlarges, and lines with wool and other soft materials. It feeds and tends its offspring, which are generally two or three in number, with great assiduity. Mr. Ray affirms, that if the female be killed during the time of incubation, the male Buzzard will take the charge of the young ones, and will patiently rear them till they are able to provide for themselves.

The following anecdote, which was related by M. Fontaine, curé de St. Pierre de Belesme, to M. de Buffon, will show that the Buzzard may be so far tamed, as to be rendered a faithful domestic. "In 1763 (says this gentleman,) a Buzzard was brought to me that had been taken in a snare. It was at first wild and ferocious. I undertook to tame it; and I succeeded, by leaving it to fast, and constraining it to come and eat out of my hand. By pursuing this plan, I brought it to be very familiar; and, after having shut it up about six weeks, I began to allow it a little liberty, taking the precaution, however, to tie both pinions of its wings. In this condition it walked out into my garden, and returned when I called it to feed. After some time, when I judged

that I could trust to its fidelity, I removed the ligatures; and fastened a small bell, an inch and a half in diameter, above its talon, and also attached to its breast a bit of copper, having my name engraved on it. I then gave it entire liberty, which it soon abused; for it took wing, and flew as far as the forest of Belesme. I gave it up for lost; but four hours afterwards, I saw it rush into my hall, pursued by five other buzzards, which had constrained it to seek again its asylum.

"After this adventure, it preserved its fidelity to me, coming every night to sleep on my window. It soon became familiar; attended constantly at dinner; sat on a corner of the table, and often caressed me with its head and bill, emitting a weak, sharp cry, which, however, it sometimes softened. It is true that I alone had this privilege. It one day followed me when I was on horseback, more than two leagues, flying above my head.

"It had an aversion both to Dogs and Cats; nor was it in the least afraid of them: it had often tough battles with them, but always came off victorious. I had four strong Cats, which I collected into my garden with my Buzzard. I threw to them a bit of raw flesh: the nimblest Cat seized it; the rest pursued, but the Bird darted upon her, bit her ears with his bill, and squeezed her sides with his talons so forcibly, that the Cat was obliged to relinquish her prize. Often another Cat snatched it the instant it dropped; but she suffered the same treatment, till the Buzzard got entire possession of the plunder. He was so dexterous in his defence, that, when he perceived himself assailed at once by the four Cats, he took wing, and uttered a cry of exultation. At last, the Cats, chagrined by their repeated disappointment, would no longer contend with him.

"This Buzzard had a singular antipathy: he would not suffer a red cap to remain on the head of any of the peasants; and so alert was he in whipping it off, that they found their heads bare without knowing what was become of their caps. He also snatched away wigs, without doing any injury; and he carried these caps and wigs to the tallest tree in a neighboring park, which was the ordinary deposit of his booty.

"He would suffer no other Birds of prey to enter his domain: he attacked them boldly, and put them to flight. He did no mischief in my court-yard; and the poultry, which at first dreaded him, grew insensibly reconciled to him. The Chickens and Ducklings received not the least harsh usage; and yet he bathed among the latter. But, what is singular, he was not gentle to my neighbors' poultry; and I was often obliged to publish that I would pay for the damages that he might occasion. However, he was frequently fired at; and, at different times, received fifteen musket-shots without suffering any fracture. But once, early in the morning, hovering over the skirts of a forest, he dared to attack a Fox; and the keeper, seeing him on the shoulders of the Fox, fired two shots at him: the Fox was killed, and the Buzzard had his wing broken; notwithstanding this fracture, he escaped from the keeper, and was lost for seven days. This man having discovered, from the noise of the bell, that it was my Bird he had shot, came the next morning to inform me. I sent to search near

the spot; but the Bird could not be found, nor did it return till seven days afterwards. I had been used to call him every evening with a whistle: this he did not answer for six days; but on the seventh I heard a feeble cry at a distance, which I judged to be that of my Buzzard: I repeated the whistle a second time, and heard the same cry. I went to the place from which the sound came; and, at last, found my poor Buzzard with his wing broken. He had travelled more than half a league on foot to regain his asylum, from which he was then distant about a hundred and twenty paces. Though he was extremely reduced, he gave me many caresses. It was six weeks before he was recruited, and his wounds were healed; after which he began to fly as before, and to follow his old habits: these he continued for about a year, and then disappeared for ever."

THE KITE, GLEDE, OR GLED.

The Kite, Glede, or Gled, is not uncommon in England, and is spread over Europe, Asia, and Northern Africa. It is especially hated by the farmer for its depredations on his poultry, and its appearance is the signal for a general outcry among the terrified poultry, who perceive it long before the keenest-eyed man can distinguish it from a casual spot in the distant sky. The sportsman also detests it for the havoc which it makes among the game,—possibly the Kite hates the sportsman for the same reason.



KITE.

It builds in tall trees, and lays three eggs, white, spotted with reddish brown at the larger end. Its length is rather more than two feet; the fourth primary feather is the longest, the first and seventh nearly equal.

THE GENTIL FALCON.

The Gentil Falcon measures about two feet in length. Its beak is of a red color, with a yellow cere. The head and back part of the neck are rusty, with oblong black spots. The back and wings are brown, and each feather of the wings is tipped with rust-color. The quills are dusky; the outer webs barred with black, and the lower parts of the inner webs are marked with white. The wings reach to the middle of the tail, which is banded with black and ash-color, and tipped with white. The legs are short and yellow, and the claws black.

When, in ancient times, the sport of falconry was in high repute, this was one of the species of Falcons which was employed. It is a spirited and dauntless bird; and in a wild state is a native of the rocks of Caernarvonshire, and the Highlands of Scotland.

In Syria there is a small variety of the Gentil Falcon, which the in

habitants denominate Shaheen; and which is of so fierce and courageous a disposition, that it will attack any Bird, however large or powerful, which presents itself. "Were there not (says Dr. Russel, in his account of Aleppo) several gentlemen now in England, to bear witness to the fact, I should hardly venture to assert that, with this bird, which is about the size of a Pigeon, the inhabitants sometimes take large Eagles. This Hawk, in former times, was taught to seize the Eagle under the pinion, and thus depriving him of the use of one wing, both birds fell to the ground together; but I am informed that the present mode is to teach the Hawk to fix on the back, between the wings, which has the same effect, only that, the bird tumbling down more slowly, the falconer has more time to come to his Hawk's assistance; but in either case, if he be not very expeditious, the Falcon is inevitably destroyed.

"I never saw the Shaheen fly at Eagles, that sport having been disused before my time; but I have often seen him take Herons and Storks. The Hawk, when thrown off, flies for some time in a horizontal line, not six feet from the ground, then mounting perpendicularly, with astonishing swiftness, he seizes his prey under the wing, and both together come tumbling to the ground. If the falconer, however, be not expeditious, the game soon disengages itself and escapes."

THE GOSHAWK.

The Goshawk is found plentifully in most of the wooded districts of Europe, but is comparatively rare in the British Isles. It seldom breeds south of Scotland, but its nest is not unfrequently found in that country, built upon lofty trees, principally firs, and containing three eggs of a bluish white color with reddish brown marks. When in pursuit of prey, it strikes its victim to the ground by the force with which it dashes through the air. Should the terrified quarry hide itself, the Goshawk takes up its station on some elevated spot, and there patiently waits until the game takes wing. Its principal food consists of Hares, Squirrels, Pheasants, and other large Birds, which its great strength enables it to destroy. Its length is about two feet; the fourth primary feather is the longest.

THE HEN HARRIER.

The Hen Harrier is about seventeen inches long, and three feet wide. Its bill is black, and cere yellow. The upper parts of its body are of a bluish gray: and the back of the head, the breast, belly, and thighs are white; the two former marked with dusky streaks. The two middle feathers of the tail are gray, and the outer webs of the others are of the same color; but the inner ones are marked with alternate bars of white and rust-color. The legs are long, slender and yellow; and the claws black.



GOSHAWK.

It is about forests, heaths, and other retired places, especially in the neighborhood of marshy grounds, where they destroy vast numbers of Snipes, that these birds are usually seen. They sail with great regularity all over a piece of marsh, till they discover their prey, when they immediately pounce upon and seize it.

A gentleman who was shooting in Hampshire, by chance sprung a Pheasant in a wheat-stubble, and shot at it: notwithstanding the report of the gun, it was pursued by a Hen Harrier, but escaped into a covert. He then sprung a second, and a third, in the same field, and these likewise got away; the Hawk hovering round him all the while he was beating the field, conscious, no doubt, of the game that lurked in the stubble. Hence we may conclude, that this bird of prey was rendered daring and bold by hunger, and that Hawks are not always in a condition to strike their game. We may further observe, that they cannot pounce on their quarry when it is on the ground, where it might be able to make a stout resistance: since so large a fowl as a Pheasant could



HEN HARRIER.

not but be visible to the piercing eye of a Hawk, when hovering over it. Hence that propensity in game to cowering and squatting till they are almost trodden on; which, doubtless, was intended by Providence, as a mode of security, though it has long been rendered destructive by the invention of nets and guns.

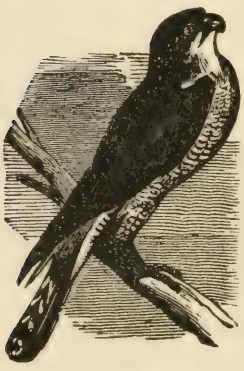
A Hen Harrier that was shot some years ago near London, was first observed dodging round the lower parts of some old trees, and then seeming to strike against the trunks of them with its beak or talons, but still continuing on wing. The cause of this singular conduct could not even be conjectured, till after it was killed; when on opening its stomach, nearly twenty small brown Lizards were found there, which it had artfully seized, by coming suddenly upon them. They were each bitten or torn into two or three pieces.

These destructive birds may be caught by means of a trap, baited with a stuffed Rabbit's skin, and covered nicely over with moss. They breed annually on the Cheviot-hills; and from a Hen Harrier and Ring Tail (*Falco pygargus*) having been shot on the same nest, it appears that these are not two distinct species, however different they may be in appearance, but that they are in reality the male and female of the same.

The nest of the Hen Harrier is usually formed near the ground, amongst furze or in thickets. It is constructed of sticks rudely put together, and is nearly flat. The eggs are about four in number, without spots, and of a dirty white color.

THE SPARROW-HAWK.

The male Sparrow-nawk is about twelve, and the female, fifteen, inches in length. The exterior feathers of the upper parts of the latter are brown, with dusky edges; and on the back of the head there are some whitish spots. The under parts are yellowish white, waved with light brown. The chin is streaked with perpendicular lines of brown. The tail is barred with dark brown, and is white at the end. The legs are yellow, and the claws black. The male is somewhat different. The upper part of its breast is of a dark lead-color; the bars on this part are more numerous, and the under parts are altogether darker. In both sexes the bill is blue, and the cere yellow.



SPARROW HAWK.

The Sparrow-hawk is a bold bird. It is the dread of the farm-yard, for, at times, it makes great havoc among young poultry; and it commits its depradations in the most daring manner, even in the presence of mankind. In winter it often makes havoc among the flocks of Buntings and Finches.

Few of the rapacious birds are so docile and obedient as this. When properly trained it is capable of great attachment; and it is so far susceptible of education, that it may be taught to pursue Par-

tridges and other game. It will also pounce upon Pigeons when separated from their companions.

The editor of a respectable publication, entitled the Beauties of Natural History, states, that when he was a boy he had a Sparrow-hawk that used to accompany him through the fields, catch its game, devour it at leisure, and, after all, find him out wherever he went; nor, after the first or second adventure of this kind, was he ever afraid of losing the bird. A peasant, however, to his great mortification, one day shot it for having made too free with some of his poultry. It was about as large as a Wood-pigeon; and this gentleman says he has seen it fly at a Turkey-cock.



SPARROW HAWK AND ITS PREY.

THE SWALLOW-TAILED HAWK.

This beautiful Kite breeds and passes the summer in the warmer parts of the United States, and is also probably resident in all tropical and temperate America, migrating into the southern as well as the northern hemisphere. In the former, according to Viellot, it is found in Peru, and as far as Buenos Ayres; and though it is extremely rare to meet with this species as far as the latitude of forty degrees in the Atlantic States, yet tempted by the abundance of the fruitful valley of the Mississippi, individuals have been seen along that river as far as the Falls of St. Anthony, in the forty-fourth degree of north latitude. Indeed, according to Fleming, two stragglers have even found their devious way to the strange climate of Great Britain.



SWALLOW-TAILED HAWK.



THE FALCONER.

THE PEREGRINE FALCON.

The Peregrine Falcon, an inhabitant of most parts of Europe, Asia and South America, was, in the palmy days of hawking, one of the fav-

orite Falcons chosen for that sport. Its strength and swiftness are very great, enabling it to strike down its prey with great ease; indeed, it has been known to disable five Partridges in succession. From its successful pursuit of Ducks, the Americans call it the Duck Hawk.

There is a peculiarity in the method of attack which this bird employs when pursuing small game. Instead of merely dashing at its prey, and grasping it with its claws, the Peregrine Falcon strikes its victim with its breast, and actually stuns it with the violence of the blow before seizing it with its claws. The boldness of the Peregrine Falcon is so great that it was generally employed to take the formidable Heron. After the Heron had been roused from his contemplations by some marsh or river, the Falcon, who had previously been held hooded on its master's hand, was loosed from its bonds and cast off. A contest then generally took place between the Heron and the Falcon, each striving to ascend above the other. In this contest the Falcon was always victorious, and after it had attained a certain altitude, it swept, or "stooped," as the phrase was, upon the Heron. When the Falcon had closed with its prey, they both came to the ground together, and the sportman's business was to reach the place of conflict as soon as possible, and assist the Falcon in vanquishing its prey. Sometimes, however, the wary Heron contrived to receive its enemy on the point of its sharp beak, and transfixed it by its own impetus.

Nothing can exceed the terror in which the Peregrine Falcon is regarded by such of its feathered brethren as cannot compete with it in strength and activity; indeed, no bird from a Wild Goose to a Lark is safe from its murderous attacks. Its prey is usually seized when upon the wing, and is made to rise from the ground by a variety of tactics. A Partridge it terrifies by performing gyrations above its head till it seeks safety in flight.

It changes the color of its plumage several times before it arrives at full maturity, and in the days of falconry was known by different names, such as "Hagard" when wild, "Eyass," "Red Falcon" when young, "Tiercel" or "Tassel-gentle" when a full-grown male, a term forcibly recalling the words of Juliet, "Oh for a Falconer's voice to lure this *Tassel-gentle* back again!"

It builds on ledges of rocks, laying four eggs of a reddish brown color. Its length is from fifteen to eighteen inches.

THE CHAUNTING FALCON.

This lately-discovered species is about the size of the Common Falcon. Its plumage is, in general, of a pale lead-color, with the top of the head and the scapulars inclining to brown. The under parts of the breast are of a pearly gray, crossed with numerous gray stripes. The quills are black. The tail is wedge-shaped, the outer feathers one-third shorter than the middle ones, and the tip white. The bill and claws are black, and the cere and legs orange.

During the breeding season the male of this species is remarkable

for its song, which it utters every morning and evening, and like the Nightingale, not uncommonly all the night through. It sings in a loud tone for more than a minute, and after an interval begins anew. During its song it is so regardless of its own safety, that any one may approach very near to it: but at other times it is suspicious, and takes flight on the slightest alarm. Should the male be killed, the female also may be shot without difficulty: for her attachment to him is such, that she continues flying round with the most plaintive voice; and, often passing within a few yards of the gunner, it is an easy matter to kill her. But, if the female happen to be shot first, the affection of her mate does not prove so romantic; for, retiring to the top of some distant tree, he is not easily approached: he does not, however, cease to sing, but becomes so wary as, on the least alarm, to fly entirely away from that neighborhood.

The female forms her nest between the forks of trees, or in bushy groves. She lays four white, round eggs. This Falcon, for its size, is a very destructive species. It preys on Partridges, Hares, Quails, Moles, Rats, and other small animals.

It is a native of Caffraria, in the South of Africa, and of some of the adjacent countries.

OF THE OWLS IN GENERAL.

In this tribe as in the last, the bill is hooked, but it is not furnished with a cere. The nostrils are oblong, and covered with bristly feathers. The head, ears and eyes, are very large; the tongue is cleft.



Much in the same manner as Moths differ from Butterflies, do these birds differ from the Falcons; the Owls being nocturnal, and pursuing their prey only in the night; and the Falcons flying altogether in the day-time. They feed principally on small birds and quadrupeds, and on nocturnal insects: the exuviæ and bones of which (as in the Falcons) are always discharged at the mouth, in the form of small pellets. Their eyes are so constructed, that they are able to see much more distinctly in the dusk of the evening than in the broad glare of sunshine. All animals, by the contraction and dilatation of the eye, have, in some degree, the power of shutting out or admitting light, as their necessities require. but in the Owls this property is observed in singular

perfection; and, in addition to this, there is an irradiation on the back of the eye, which greatly aids their vision in the obscure places that they frequent.



The head is round, and formed somewhat like that of a Cat. About the eyes, the feathers are ranged as if proceeding from a common centre in the middle of the eye, and they extend in a circle to some distance. The legs are clad with down or feathers, even to the origin of the claws, which are very sharp and hooked. Three of the toes can occasionally be turned back, to suit either for perching or climbing, as occasion may require.

In winter Owls retire into holes in towers and old walls, and pass that season in sleep. The number of species is about *fifty;* of which twenty are furnished with long feathers, surrounding the openings of the ears, and called, from the appearance they give to the animals, *horns.* In their general modes of life, the Owls may be considered as the Cats of the feathered species.

THE GREAT HORNED, OR EAGLE OWL.

The body of this Owl is of a tawny red color, marked with lines and spots, elegantly varied, of black, brown, ash, and rust color. The wings are long, and the tail is short, and marked with transverse dusky streaks. The legs are thick, of a brick-dust red color, and (except in one variety) feathered to the claws, which are large, hooked, and dusky.

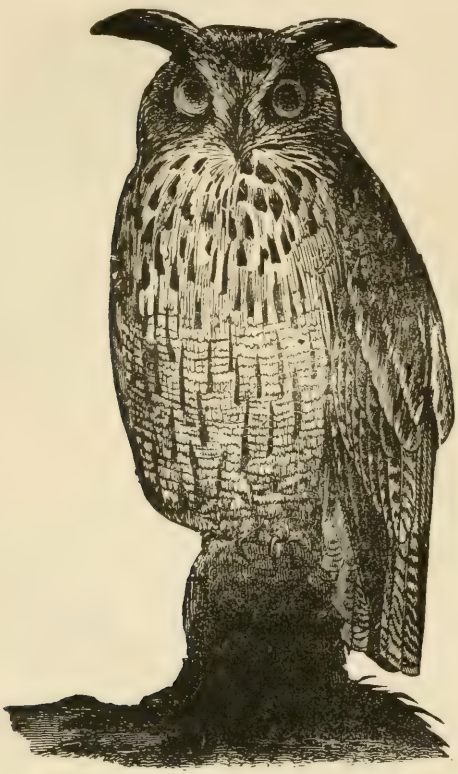


Although Owls are superstitiously considered by the inhabitants of most countries as birds of ill-omen; yet the Athenians alone, among the ancients, seem to have been free from this popular prejudice, and to have regarded them rather with veneration than abhorrence. The present species, which is common in many parts of Greece, was even considered a favorite bird of Minerva; and at Athens the inhabitants had a proverb, "to send Owls to Athens," which was precisely equivalent to one used by the English, "to send coals to Newcastle."

This Owl is equal in size to some of the Eagles: it inhabits inaccesible rocks and desert places, in most parts of Europe, Asia, and America; and is sometimes, though rarely found in this country. Its eyes are so constructed, that it is able to see much better during the day-time than almost any other of the tribe. It has been frequently observed preying, on its game of birds and small quadrupeds, in full day-light.

M. Cronstedt has recorded a pleasing instance of the attachment of these birds to their offspring. This gentleman resided several years at a farm in Sudermania, near a steep mountain, on the summit of which two Eagle Owls had their nest. One day in the month of July, a young Owl having quitted the nest was seized by some of his servants.

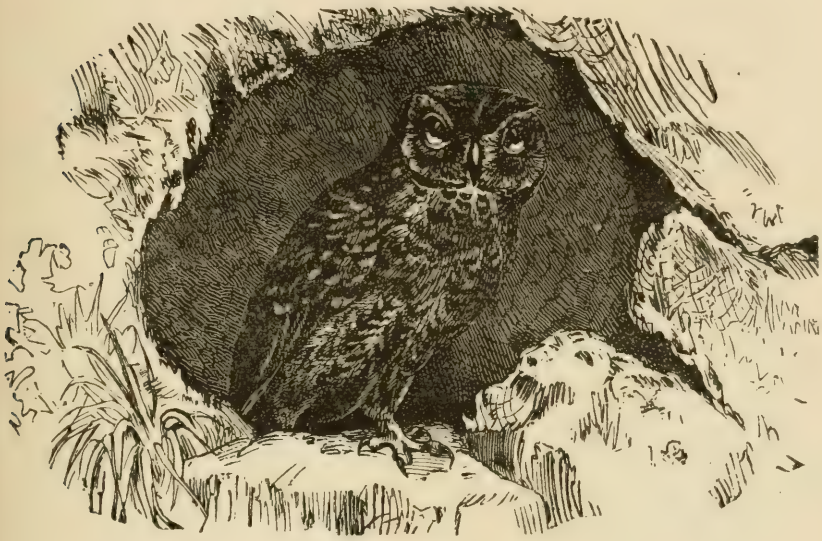
This bird, after it was caught was shut up in a large hen-coop; and the next morning M. Cronstedt found a young Partridge lying dead before the door of the coop. He immediately concluded that this provision had been brought thither by the parent birds; which he supposed had been making search in the night time for their lost young-one and had been led to the place of its confinement by its cry. This proved to have been the case, by the same mark of attention being repeated for fourteen successive nights. The game which the old ones carried to it consisted principally of young Partridges, for the most part newly killed, but sometimes a little spoiled. One day a moor-fowl was brought, so fresh, that it was still warm under the wings. A putrid Lamb was found, at another time. M. Cronstedt and his servant watched at a window several nights, that they might observe, if possible, when this supply was deposited. Their plan did not succeed: but it appeared that the Owls, which are very sharp-sighted, had discovered the moment when the window was not watched; as food was found to have been deposited before the coop, one night when this had been the case. In the month of August the parents discontinued this attention; but at that period all birds of prey abandon their offspring to their own exertions. From this instance, some idea may be formed of the great quantity of game that must be destroyed by pair of these Owls, during the time they are employed in rearing their young.



EAGLE OWL.

It is said that sometimes, when falconers wish to lure the Kite for the purpose of training the Falcon, they disfigure an Owl of this species, by fastening to it the tail of a Fox. The animal, rendered thus grotesque is let loose: and he sails slowly along, flying, as he usually does, very

low. The poor Kite, either curious to observe so strange an animal, or, perhaps inquisitive to know whether it may not be eligible prey, flies after it. He approaches near, and hovers immediately over it; when the falconer, loosing a strong-winged Falcon against him, seizes him at once, and drags him into captivity.



STONE OWL.

THE WHITE, OR SCREECH OWL.

The plumage of these Owls is very elegant. A circle of soft white feathers surrounds each of the eyes. All the upper parts of the body are of a fine pale yellow color, variegated with white spots; and the under parts are entirely white. The legs are feathered down to the claws.

Incapable of seeing their prey in the full blaze of day, these Birds keep concealed during this time. Legions of birds flock around them, and single them out as objects of derision and contempt. They increase their cries and turbulence around him, flap him with their wings, and, like cowards, are ready to exhibit their courage when they are sensible that the danger is but small. The unfortunate wanderer, not knowing where he is, whom to attack, or whither to fly, patiently sits and suffers all their indignities with the utmost stupidity. An aversion which the smaller birds bear to the Owl, with a temporary assurance of their own security, urge them to pursue him, whilst they encourage each other, by their mutual cries, to lend assistance in the general cause. Bird-catchers, aware of this singular propensity, having first limed several of the outer branches of a hedge, hide them-

selves near it, and imitate the cry of an Owl; when instantly all the small birds who hear it flock to the place, in hopes of their accustomed game; but, instead of meeting a stupid and dazzled antagonist, they find themselves ensnared by an artful and unrelenting foe.

This want of sight is compensated by their peculiar quickness of hearing; for the latter sense is much more acute in the Owls than in most other birds.

The White Owl generally quits its hiding place about the time of twilight, and takes a regular circuit round the fields, skimming along the ground in search of its food, which consists chiefly of Field-mice and small birds. Like the rest of its tribe, it afterwards emits the bones, feathers, hair, and other indigestible parts, at the mouth, in the form of small pellets. A gentleman, on digging up a decayed pollard-ash that had been frequented by Owls for many generations, found at the bottom many bushels of this kind of refuse. Sometimes these Owls, when they have satisfied their appetite, will, like Dogs, hide the remainder of their meat. Mr. Stackhouse, of Pendarvis in Cornwall, informed me, that in his pleasure-grounds he often found Shrew-mice lying in the gravel-walk, dead, but with no external wound. He conjectured that they had been struck by the Owls, in mistake for Field-mice; and that these birds, afterwards finding their error, in having destroyed animals to which they have a natural antipathy, had left them untouched. This gentleman discovered, by accident, another of the antipathies of White Owls. A Pig having been newly killed, he offered a tame Owl a bit of the liver; but nothing, he says, could exceed the contemptuous air with which the bird spurned it from him.

The Mogul and Kalmuck Tartars pay almost divine honors to the White Owl; for they attribute to it the preservation of Jenghis Khan, the founder of their empire. That prince, with a small army, happened to be surprised and put to flight by his enemies. Compelled to seek concealment in a coppice, an Owl settled on the bush under which he was hidden. This circumstance induced his pursuers not to search there, since they supposed it impossible that that bird would perch where any man was concealed. The Prince escaped; and thenceforth his countrymen held the White Owl sacred, and every one wore a plume of feathers of this bird on his head. To this day, the Kalmucks continue the custom on all their great festivals; and some of the tribes have an idol, in the form of an Owl, to which they fasten the real legs of the Bird.

The Screech Owl is well known in all parts of England, from the circumstance of its frequenting churches, old houses, and uninhabited buildings; where it continues during the day, and whence, in the evening, it ranges abroad in quest of food. It received its name from the singular cry which it emits during its flight. In its repose it makes a blowing kind of noise, like the snoring of a man. The female forms no nest; but deposits her eggs, generally five or six in number, in the holes of decayed walls, or under the eaves of old buildings. While the young-ones are in the nest, the male and female alternately sally out in quest of food. They are seldom absent more than five minutes

when they return with the prey in their claws; but, as it is necessary to shift it from these into their bill, for the purpose of feeding their young-ones, they always alight so do that before they enter the nest. As the young Owls continue for a great length of time in the nest, and are fed even long after they are able to fly, the old birds have to supply them with many hundreds of Mice; on this account they are generally considered useful animals in the destruction of vermin of this description.

THE BROWN OWL.

The Brown Owl measures somewhat more than a foot in length; and is spotted with black on the head, wings, and back. Its breast is of a pale ash-color, with dusky, jagged, longitudinal streaks; and the circle round the eyes is ash-colored, spotted with brown.



BROWN OWL.

Few of the Owls are more rapacious than these. They reside in woods during the day; but at the approach of evening, when many animals, such as Hares, Rabbits, and Partridges, come out to feed they begin to be clamorous and active; they destroy such multitudes of small animals, as, on calculation, would appear astonishing. In the dusk of the evening, the Brown Owls approach the farmers' dwellings; and frequently enter the Pigeon-houses, where they sometimes commit dreadful ravages. They also kill great numbers of Mice, and skin them with as much dexterity as a cook-maid does a Rabbit. They seize their prey with great ferocity, and, always beginning at the head, tear it in pieces with much violence. Were they to appear abroad at any time but in the night, when all the poultry are gone to roost, the havoc they would commit in the farm-yard would be prodigious. They do not devour every part of the animals they destroy; the hinder parts they generally leave untouched.

On examining a nest of these Owls that had in it two young ones, several pieces of Rabbits, Leverets, and other small animals, were found. The hen and one of the young ones were taken away; the other was left to entice the cock, which was absent when the nest was discovered. On the following morning there were found in the nest three young Rabbits, that had been brought to this young-one by the cock during

the night. These birds are occasionally very bold and furious in defence of their young. A carpenter some years ago, passing through a field near Gloucester, was suddenly attacked by an Owl that had a nest in a tree near the path. It flew at his head; and the man struck at it with a tool that he had in his hand, but missed his blow. The enraged bird repeated the attack; and fastening her talons in his face, lacerated him in a most shocking manner.

When these animals hoot, they inflate their throats to the size of a hen's egg. They breed in hollow trees, or ruined buildings, laying commonly four whitish oval eggs. It is not difficult to catch them in traps; or they may easily be shot in the evenings, by any person who can allure them by imitating the squeaking of a Mouse.

THE GREAT VIRGINIAN HORNED OWL.

This species, so nearly related to the Great Eared Owl of Europe, is met with occasionally from Hudson's Bay to Florida, and in Oregon; it exists even beyond the tropics, being very probably the same bird described by Marcgrave as inhabiting the forests of Brazil. All climates are alike to this Eagle of the night, the king of the nocturnal tribe of American birds. The aboriginal inhabitants of the country dread his boding howl, dedicating his effigies to their solemnities, and, as if he were their sacred bird of Minerva, forbid the mockery of his ominous, dismal, and almost supernatural cries. His favorite resort, in the dark and impenetrable swampy forests, where he dwells in chosen solitude



GREAT HORNED OWL.

secure from the approach of every enemy, agrees with the melancholy and sinister traits of his character. To the surrounding feathered race he is the Pluto of the gloomy wilderness, and would scarcely be known out of the dismal shades where he hides, but to his victims, were he as silent as he is solitary. Among the choking, loud, gutteral sounds which he sometimes utters, in the dead of night, and with a suddenness which always alarms, because of his noiseless approach, is the *'waugh hó! 'waugh hó!* which, Wilson remarks, was often uttered at the instant of sweeping down around his camp-fire. Many kinds of Owls are similarly dazzled and attracted by fire-lights, and occasionally finding no doubt, some offal or flesh, thrown out by those who encamp in the wilderness, they come round the nocturnal blaze with other motives than barely those of curiosity. The solitary travellers in these wilds, apparently scanning the sinister motive of his visits, pretend to interpret his address into "*'Who cooks for you all!*" and with a strong gutteral pronunciation of the final syllable, to all those who have heard this his common cry, the resemblance of sound is well hit, and instantly recalls the ghastly serenade of his nocturnal majesty in a manner which is not easily forgotten. The shorter cry, which we have mentioned, makes no inconsiderable approach to that uttered by the European brother of our species, as given by Buffon, namely, *'he-hoo, 'hoo-hoo, hoo-hoo*, &c. The Greeks called this transatlantic species *Byas*, either from its note, or from the resemblance this bore to the bellowing of an Ox. The Latin name *Bubo* has also reference to the same note of this nocturnal bird. According to Frisch, who kept one of these birds alive, its cries varied according to circumstances; when hungry it had a muling cry like *Páh!*. I have remarked the young, probably, of our species utter the same low, quailing cry, while yet daylight, as it sat on the low branch of a tree; the sound of both is, at times, also not unlike that made by the Hawks or diurnal birds of prey. Indeed in gloomy weather, I have seen our species on the alert, flying about many hours before dark, and uttering his call of *'ko ko, ko kó ho.* Their usual prey is young Rabbits, Squirrels, Rats, Mice, Quails, and small birds of various kinds, and when these resources fail or diminish they occasionally prowl pretty boldly around the farm-yard in quest of chickens, which they seize on the roost. Indeed the European Horned Owl frequently contends with the Buzzard for its prey, and generally comes off conqueror; blind and infuriate with hunger, one of these has been known to dart even upon a man, as if for conflict, and was killed in the encounter.

THE HAWK OWL.

This remarkable species, forming a connecting link with the preceding genus of the Hawks, is nearly confined to the Arctic wilds of both continents, being frequent in Siberia and the fur countries from Hudson's Bay to the Pacific. A few stragglers, now and then, at distant intervals and in the depths of winter, penetrate on the one side into the northern parts of the United States; and, on the other, they occasionally appear

in Germany, and more rarely in France. At Hudson's Bay they are observed by day flying high, and preying on the White Grouse and other birds, sometimes even attending the hunter like a Falcon, and boldly taking up the wounded game as it flutters on the ground. They are also said to feed on Mice and insects, and (according to Meyer) they nest upon trees, laying two white eggs. They are said to be constant attendants on the Ptarmigans in their spring migrations towards the north; and are observed to hover round the camp fires of the natives, in quest probably of any offal or rejected game.



HAWK OWL.

THE GOAT SUCKER.

The Accipitres, it will be remembered, possess strong hooked beaks and sharp curved claws. The foot and head of the Passeres are entirely different;—the beak being without the formidable curved tip, and the claws being of a quiet and peaceful character.

The first tribe of this order, the Fissirostres, are so called from the peculiar formation of their mouths, which appear as if they had been slit up from their ordinary termination to beyond the eyes, much resembling the mouth of a Frog. In the insect-eating Fissirostres this formation is admirably adapted for capturing their active prey, and in the Kingfishers it is equally adapted for securing the slippery inhabitants of the waters.



GOAT SUCKER.

The Caprimulgidæ are nocturnal in their habits, chasing their insect prey by night or at the dusk, when the Chaffers and the large Moths are on the wing. In order to prevent the escape of the insect when taken, the mouth is fringed with long stiff bristles, called "vibrissæ."

The name of Goat Sucker is derived from a silly notion that they suck Goats, a piece of credulity only equalled by the Hedgehog's supposed crime of sucking Cows, and the accusation against the Cat of sucking the breath of children. The genus Caprimulgus is furnished with a kind of comb on the middle claw of its foot, but for what purpose is not clearly ascertained. The power of wing in these birds is very great, and hardly surpassed by that of the Swallow, both birds obtaining their food in a similar manner.

The Night-Jar, or Goat Sucker, sometimes called the Fern Owl, is spread over Europe, and is tolerably common in England. It may be seen at the approach of evening, silently wheeling round the trees, capturing the nocturnal Moths and Beetles; then occasionally settling and uttering its jarring cry. When flying the bird sometimes makes its wings meet over its back, and brings them together with a smart snap. It arrives in England about the beginning of May, and leaves in December. It makes no nest, but lays two mottled eggs on the bare ground. Its length is ten inches The Whip-poor-will and the Chuck-will's-widow both belong to this family.



CHUCK-WILL'S-WIDOW.

These two birds derive their singular names from their cry which is said closely to imitate the words that have been assigned to them as their names. This bird, known as "Chuck-will's-widow," is partially migratory, and dwells in the more southern parts of America during the winter. Audubon relates that this bird applies its enormous mouth to rather an unexpected use, viz., that of removing its eggs if it finds that they have been disturbed. Of this curious circumstance he was an eye-witness. He saw the bird that first discovered that an intruder had touched the eggs wait for its mate and then saw each of them take an egg in its mouth and carry it off.

THE PAPUAN PODARGUS.

This species of the Night-Jar family is exclusively confined to Australia and the islands of the Indian Archipelago. It appears to be closely allied to a very rare species from Java, described by Dr. Horsfield, under the name of *Podargus Javanensis*. Even more confused by the light than is the common Goat Sucker, the members of the genus Podargus are completely nocturnal; they haunt the solitudes of the woods, and the sombre, but intermingled tints of their plumage screen them from observation. They issue forth only at night, but on the approach of day retire to their seclusion.

In connexion with our observations on the genus *Podargus*, we cannot omit a short notice of a most extraordinary bird, in many respects closely related to this genus, but which truly forms the type of a distinct generic group, under the title of *Steatornis*. We allude to the Guacharo (*Steatornis caripensis*, Humb.,) of which a memoir is published in the 'Nouvelles Annales du Muséum,' vol. III., part 4, by M. l'Herminier. The Guacharo is a native of the range of deep and gloomy caverns of Caripe, in the province of Cumana, where it was first discovered by MM. Humboldt and Bonpland in the year 1799 These caverns are formed in the sides of tremendous calcareous rocks, divided by a stupendous chasm, over which are thrown the famous bridges of Icononzo. "Numberless flights of nocturnal birds," says Humboldt "haunt the crevice, and which we were led at first to mistake for Bats of a gigantic size. Thousands of them are seen flying over the surface of the water. The Indians assured us that they are of the size of a fowl with a curved beak and an Owl's eye. They are called *Cacas*, and the uniform color of their plumage, which is bluish grey, leads me to think that they belong to the genus of *Caprimulgus*, the species of which are so various in the Cordilleras. It is impossible to catch them on account of the depth of the valley, and they can only be examined by throwing down rockets to illuminate the sides of the rock."

M. Depens, in his 'History of South America,' alludes to the same bird, of which he says, millions inhabit the cavern Called Guacharo, which is immense, and that their fat yields the "oil of Guacharo"

"Daylight penetrates far into the grotto, but when the light begins to fail, the hoarse voices of the inhabitants become audible, and it would be difficult to form an idea of the horrible noise occasioned by thousands of these birds in the dark parts of the cavern. Their shrill and piercing cries strike upon the vaults in the rocks, and are repeated by the subterranean echoes. The Indians showed us the nests of the Guacheros by fixing a torch to a long pole; these nests were fifty or sixty feet above our heads, in holes of the shape of funnels, with which the roof of the grotto is pierced like a sieve. The noise increased as we advanced, the birds becoming scared by the torches we carried; but when the din somewhat abated, immediately around us we heard at a distance the plaintive cries of others at roost in the ramifications of the cavern. It seemed as if different groups answered each other alternately. The Indians enter the Cueva del Guachero once a year, near midsummer. They go armed with poles, with which they destroy the greater part of the nests. At that season several thousand birds are killed, and the old ones, as if to defend their brood, hover over the heads of the Indians, uttering terrible cries. The young, which fall to the ground, are opened on the spot. Their peritoneum is found extremely loaded with fat, and a layer of fat reaches from the abdomen to the vent, forming a kind of fatty cushion between the legs. At the period commonly called at Caripe the 'oil harvest,' the Indians build huts with palm leaves near the entrance and even in the porch of the cavern, where, with a fire of brushwood, they melt in pots of clay the fat of the young birds just killed. This fat is known by the name of butter or oil (*manteca* or



GUACHAROS, OR OIL BIRD.

aceite) of the Guachero. It is half liquid, transparent, without smell, and so pure that it may be kept above a year without becoming rancid. At the convent of Caripe no other oil is used in the kitchen of the monks but that of the cavern, and we never observed that it gave the aliments a disagreeable taste or smell."

Funck, who also visited the cavern above described, states that the Guacheros leave their nests after darkness has completely closed in, and that their harsh, raven-like cry may then be heard as they fly about in quest of food. Fruit forms their usual nourishment, and this they will swallow even if as large as a pigeon's egg; but the seeds and kernels they reject as indigestible. The nest is constructed of clay, and the brood consists of from two to four eggs. Grosz also gives an account very similar to that of Humboldt respecting another stronghold of the oil birds called the Ravine of the Iconongo that he visited in New Granada. This extensive nesting-place is about half a mile long, and from thirty to forty feet broad, and had to be entered by means of a rope let down from above. Grosz fortunately succeeded in obtaining many Guacheros, both dead and alive, and made valuable observations relative to their demeanor and habits.

PIES.

In all birds of this order the bill is sharp-edged and convex on its upper surface. The legs are short, tolerably strong, and, in some species, formed for perching; (that is, with three toes forward and one backward;) in others formed for climbing, with two toes forward and two backward; and in others for walking, that is, without any back toe.

OF THE SHRIKES IN GENERAL.

In these birds the bill is strong, straight at the base and hooked or bent towards the end; and the upper mandible is notched near the tip. The base is not furnished with a cere. The tongue is jagged at the end. The outer toe is connected to the middle one as far as the first joint.

Although the Shrikes have been arranged by Linnæus amongst the rapacious birds, yet, with Mr. Pennant and Dr. Latham, I am inclined to place them amongst the *Pies*. If we retain the Shrike in the former order, on account of its chiefly feeding upon animal food, it would be difficult to dispose properly of the Kingfisher, the Woodpecker, and some other genera which do the same. If we dwell on the curvature of the bill, how will this agree with the Parrots, whose natural food is fruit? And as to the Shrikes living on other birds, whenever opportunity offers, several of the Crows and other tribes do the like. Their habits resemble, in a great measure, those of the Pies; as Linnæus has himself acknowledged: and although he has arranged them among the rapacious birds, he seems to consider them as holding a kind of middle place between the Pies and (on account of their smallness) the Passerine order. They seem, however, to stand, with greater propriety at the head of the Pies; forming there a connecting link between them and the rapacious birds.

They are inhabitants of every quarter of the world: and are found in all climates, except within the Arctic Circle.

THE GREAT OR CINEREOUS SHRIKE.

The Great Shrike or Butcher-bird, is a native both of Europe and America; and is, in general, about ten inches in length. Its bill is black, about an inch long, and hooked at the end. The upper parts of the plumage are of a pale ash-color; and the wings and tail are black, varied with white. The throat, breast, and belly, are of a dirty white; and the legs are black. The female differs very little in appearance from the male

The muscles which move the bill of this Shrike are very thick and strong; an apparatus that is peculiarly necessary to a species whose mode of killing and devouring its prey is very singular. The Shrike seizes the smaller birds by the throat, and thus strangles them; and it is probably for this reason that the Germans call him by a name signifying "*The suffocating Angel.*" When his prey is dead, he fixes it on some thorn; and, thus spitted, tears it to pieces with his bill. Even when confined in a cage, he will often treat his food in much the same manner, by sticking it against the wires before he devours it.

In spring and summer, he imitates the voices of other birds, by way of decoying them within his reach, that he may devour them; excepting this, his natural note is the same throughout all seasons. When kept in a cage, even where he seems perfectly contented, he is always mute.

Mr. Bell who travelled from Moscow, through Siberia to Pekin, says, that in Russia these birds are often kept tame in houses. He had one of them given to him, and taught it to perch on a sharpened stick, fixed in the wall of his apartment. Whenever a small bird was let loose in the room, the Shrike would immediately fly from his perch, and seize it by the throat in such a manner as almost in a moment to suffocate it. He would then carry it to his perch, and spit it on the sharpened end, drawing it on, carefully and forcibly, with his bill and claws. If several birds were given him, he would use them all, one after another, in a similar manner. These were so fixed, that they hung by the neck till he had leisure to devour them This uncommon practice seems necessary to these birds, as an equivalent for the want of strength in their claws to tear their food to pieces. From this they derive their appellation of *Butcher-birds.*

In America, the Great Shrike has been observed to adopt an odd stratagem, for the apparent purpose of decoying its prey. A gentleman there, accidentally observing that several Grasshoppers were stuck upon the sharp thorny branches of the trees, inquired the cause of the phenomenon; and was informed that they were thus spitted by this bird. On further inquiry he was led to suppose, that this was an instinctive stratagem adopted by the Great Shrike, in order to decoy the smaller birds, which feed on insects, into a situation from which he could dart on and seize them. He is called in America *Nine-killer,* from the supposition that he sticks up nine Grasshoppers in succession. That the insects are placed there as food to tempt other birds, is said to appear from their being frequently left untouched for a considerable length of time.

The female forms her nest of heath and moss, and lines it with wool and gossamer. She lays six eggs; which are about as big as those of a Thrush, and of a dull olive-green color, spotted at the end with black. These birds are supposed to live to the age of five or six years; and they are much valued by husbandmen, on the supposition that they destroy Rats, Mice, and other vermin. They inhabit only mountainous wilds, among furze and unfrequented thickets, and are rarely found in the cultivated parts of our island.

THE TYRANT SHRIKE.

The courage of this bird is very remarkable. It is stated that he will pursue, and is able to put to flight, all kinds of birds that ap-



SHRIKE.

proach his station, from the smallest to the largest, none escaping his fury: "nor did I ever see (says Catesby in his account of South Carolina) any that dared to oppose him while flying; for he does not offer to attack them when sitting. I have seen one of them fix on the back of an Eagle, and persecute him so, that he has turned on his back, and into various postures in the air, in order to get rid of him; and at last was forced to alight on the top of the next tree, from which he dared not move till the little Tyrant was tired, or thought fit to leave him. This is the constant practice of the cock while the hen is brooding. He sits on the top of a bush, or small tree, not far from her nest, near which, if any small birds approach, he drives them away; but the great ones, as Crows, Hawks, and Eagles, he will not suffer to come within a quarter of a mile of him without attacking them. These birds have only a chattering note, which they utter with great vehemence all the time they are fighting. When their young-ones are flown, they are as peaceable as other birds.

From authority so deservedly great as that of Catesby, we cannot but feel it unpleasant to dissent; but by a letter received by Dr. Latham, from Mr. Abbot of Georgia, observations seems to have been made somewhat different from the above:—"A Tyrant Shrike (he says) having built its nest on the outside of a large lofty pine, I was one day considering how I could procure the eggs; when, viewing the nest, I perceived a Crow alight on the branch, break and suck

the eggs, and displace the nest, appearing all the while unconcerned, notwithstanding both the cock and hen continued flying at and striking him with their bills all the while; and as soon as the Crow had completed the robbery, he departed."

The eggs of this bird are flesh-colored, and prettily marked at the larger end with dark pink and a few black spots.

OF THE PARROT TRIBE IN GENERAL.

This most extensive tribe is remarkably distinct from all others. The beak is hooked all the way from the base to the tip, and the upper mandible, or division, is moveable. The nostrils are round; and placed in the base of the bill, which in some species is furnished with a cere. The tongue is broad and blunt; the head is large, and the crown flat. The legs are short with two toes placed before and two behind, for the purpose of climbing.

The Parrots are natives chiefly of tropical regions, where they live, for the most part, on fruit and seeds; though when kept in a cage, they will occasionally eat both flesh and fish. They are gregarious, and excessively noisy and clamorous; yet, though they associate in vast multitudes, they live chiefly in pairs of one male and a female. The place they hold among the birds seems to be exactly that which the Apes and Monkeys occupy among the quadrupeds; for, like these, they are very numerous, imitative, and mischievous. They breed in the hollows of trees, like the Owls; and it is said that the male and female sit alternately upon the eggs. In Europe, they have sometimes been known to lay eggs; but they seldom sit upon them in these cool climates.

The toes of Parrots are sufficiently flexible to answer every purpose of hands, for holding their food, or carrying it to their mouths. In climbing they always use their bill to assist the feet. They are, in general, long-lived.

In a domestic state they are exceedingly docile, and very imitative of sounds; most of the species being able to counterfeit even the human voice, and to articulate words with great distinctness; but their natural voice is a loud, harsh and unpleasant scream. Alexander the Great is supposed to have been the first who introduced Parrots into Europe.

THE BRAZILIAN GREEN MACAW.

The length of this bird is about seventeen inches. Its bill is black, and, on the cheeks, there is a bare white patch, marked with black lines, in which the eyes are placed. The general color of the plumage is green. The forehead is of a chesnut purple; and the crown is blue, which color blends itself with the green as it passes backward. On the lower part of the thighs the feathers are red; and the wings are, in different parts, crimson, blue and black. The tail is green

above, near the ends blue, and beneath of a dull red. The legs are brown, and the claws black.

This Macaw, a native of Jamaica, Guiana, and the Brazils, is as beautiful as it is rare; and it is still more interesting, from its social and gentle disposition. It soon becomes familiar with persons whom it sees frequently, and it seems delighted in receiving and returning their caresses. But it has an aversion to strangers, and particularly to children; for it flies at, and sometimes attacks them with great fury.



GREEN MACAW.

The Green Macaw is exceedingly jealous; it becomes enraged at seeing a young child sharing its mistress's caresses and favors; it tries to dart at the infant; but, as its flight is short and laborious, it can only exhibit its displeasure by gestures and restless movements, and continues to be tormented by these fits till she leaves the child, and takes the bird on her finger. It is then overjoyed, murmurs satisfaction, and sometimes makes a noise resembling the laugh of an old person. Nor can it bear the company of other Parrots; and if one be lodged in the same room it seems to enjoy no comfort.

It eats almost every article of human food. It is particularly fond of bread, beef, fried fish, pastry, and sugar. It cracks nuts with its bill, and picks the kernel out dexterously with its claws. It does not chew the soft fruits; but it sucks them by pressing its tongue against the upper part of the beak: and the harder sorts of food, such as bread and pastry, it bruises or chews, by pressing the tip of the lower mandible upon the most hollow part of the upper.

Like all the other Parrots, the Green Macaw uses its claws with great dexterity; it bends forward the hinder toe to lay hold of the fruits and other things which are given it, to carry them to its bill. The Parrots employ their toes, nearly in the manner as Squirrels and Monkeys do their fore paws; they also cling and hang by them. There is another habit common to the Parrots: they never climb or creep without fastening by the bill; with this they begin, and they use their feet only as secondary instruments of motion.

THE GUINEA, OR LITTLE RED-HEADED PARROT.

The general color of the Guinea Parrot is green; its bill, chin, and forehead are red; and the rump is blue.

In size but little larger than the Lark, and in brilliancy of plumage exceeded by few of its tribe, this pleasing bird claims our greatest admiration. In a native state it is found amidst the forests of Guinea, and also in Ethiopia, Java, and the East Indies, where immense flocks of them are seen. In these countries they often commit as much devastation amongst he corn and fruit, as Sparrows do in Europe.

The trading vessels from these countries seldom fail to bring with

them considerable numbers of Guinea Parrots; but they are so tender, that most of them die in their passage to our colder climate. It has also been observed, that the firing of a vessel's great guns is fatal to many of them, which drop down dead from fear. Although very imitative of the manners of other birds, it is a difficult thing to teach them to articulate words. Some have attained this art, but the instances are rare.



THE GUINEA PARROT.

They are exceedingly kind and affectionate towards each other; and it is observed that the male generally perches on the right side of the female. She seldom attempts to eat before him.

A male and female of this species were lodged together in a large square cage. The vessel which held their food was placed at the bottom. The male usually sat on the same perch with the female, and close beside her. Whenever one descended for food, the other always followed; and when their hunger was satisfied, they returned together to the highest perch of the cage. They passed four years together in this state of confinement; and, from their mutual attentions and satisfaction, it was evident that a strong affection for each other had been excited. At the end of this period the female fell into a state of languor, which had every symptom of old age; her legs swelled, and knots appeared upon them, as if the disease had been of the nature of gout. It was no longer possible for her to descend and take her food as formerly; but the male assiduously brought it to her, carrying it in his bill, and delivering it into hers. He continued to feed her in this manner, with the utmost vigilance, for four months. The infirmities of his mate, however, increased every day; and at length she became no longer able to sit upon the perch: she remained now crouched at the bottom, and from time to time made a few useless efforts to regain the lower perch; while the male, who remained close by her, seconded these feeble attempts with all his power. Sometimes he seized with his bill the upper part of her wing, to try to draw her up to him; sometimes he took hold of her bill, and attempted to raise her up, repeating his efforts for that purpose several times. His countenance, his gestures, his continual solicitude; every thing, in short, indicated, in this affectionate bird, an ardent desire to aid the weakness of his companion, and to alleviate her sufferings. But the scene became still more interesting when the female was at the point of expiring. Her unfortunate partner went round and round her without ceasing; he redoubled his assiduities and his tender cares; he attempted to open her bill, in order to give her nourishment; his emotion every instant increased; he went to her, and returned with the most agitated air, and with the utmost inquietude: at intervals he uttered the most plaintive cries; at other times, with his eyes fixed upon her, he preserved a sorrowful silence. His faithful companion at length expired; he languished from that time, and survived her only a few months.

THE COMMON ASH-COLORED PARROT.

This Parrot is somewhat larger than a Pigeon; and, including the tail measures about twenty inches in length. The bill is black; the cere, and the skin round the eyes, are mealy and white. The plumage is chiefly ash-colored: the rump and lower part of the belly are hoary, with ash-colored edges: the feathers on the head, neck, and under parts, are hoary on their edges. The tail is of a bright red color, having the shafts of the feathers blackish. The legs are ash-colored, and the claws blackish.



THE COMMON ASH-COLORED PARROT.

It is a native of Guinea, and of several of the inland parts of Africa.

This well-known species is that which is now most commonly brought into Europe. It is superior to most others, both in the facility, and the eagerness with which it imitates the human voice; it listens with attention, and strives to repeat; it dwells constantly on some syllables which it has heard, and seeks to surpass every voice by the loudness of its own. We are often surprised by its repeating words or sounds which were never taught it, and which it could scarcely be supposed to have noticed. It seems to prescribe to itself tasks, and tries every day to retain its lesson. This engages its attention even in sleep; and, according to Marcgrave, it prattles in its dreams. Its memory, if early cultivated, becomes sometimes astonishing. Rhodiginus mentions a Parrot which could recite correctly the whole of the Apostles' Creed.

A Parrot which Colonel O'Kelly bought for a hundred guineas at Bristol, not only repeated a great number of sentences, but answered many questions: it was also able to whistle many tunes. It beat time with all the appearance of science; and so accurate was its judgment that, if by chance it mistook a note, it would revert to the bar where the mistake was made, correct itself, and still beating regular time, go through the whole with wonderful exactness. Its death was thus announced in the General Evening Post for the ninth of October, 1802: "A few days ago died, in Half-moon-street, Piccadilly, the celebrated Parrot of Colonel O'Kelly. This singular bird sang number of songs in perfect time and tune. She could express her wants articulately, and give her orders in a manner approaching nearly to rationality. Her age was not known; it was, however, more than thirty years, for previously to that period, Mr. O'Kelly bought her at Bristol for a hundred guineas. The Colonel was repeatedly offered five hundred guineas a year for the bird, by persons



who wished to make a public exhibition of her; but this, out of tenderness to the favorite, he constantly refused. The bird was dissected by Dr. Kennedy and Mr. Brookes; and the muscles of the larynx, which regulate the voice, were found, from the effect of practice, to be uncommonly strong."

The sister of M. de Buffon had a Parrot of this species which would frequently talk to himself, and seemed to fancy that some one addressed him. He often asked for his paw, and answered by holding it up. Though he liked to hear the voice of children, he appeared to have an antipathy to them; he pursued them, and bit them till he drew blood. He had also his objects of attachment; and though his choice was not very nice it was constant. He was excessively fond of the cook-maid; followed her every where, sought for, and seldom missed finding her. If she had been some time out of his sight, the bird climbed with his bill and claws to her shoulders and lavished on her his caresses. His fondness had all the marks of close and warm friendship. The girl happened to have a sore finger, which was tedious in healing, and so painful as to make her scream. Whilst she uttered her moans, the Parrot never left her chamber. The first thing he did every day was to pay her a visit; and this tender condolence lasted the whole time of the cure, when he again returned to his former calm and settled attachment. Yet this strong predilection for the girl seems to have been more directed to her office in the kitchen, than to her person; for, when another cook-maid succeeded her, the Parrot showed the same degree of fondness to the new-comer, the very first day.

Parrots not only imitate discourse, but also mimic gestures and actions. Scaliger saw one that performed the dance of the Savoyards at the same time that it repeated their song. The one last mentioned, was fond of hearing a person sing; and when he saw him dance, he also tried to caper, but with the worst grace imaginable, holding in his toes, and tumbling back in a most clumsy manner.

The society which the Parrot forms with man is, from its use of language, much more intimate and pleasing, than what the monkey can claim from its antic imitation of our gestures and actions. It highly diverts and amuses us; and in solitude it is company: the bird takes part in conversation, it laughs, it breathes tender expressions, or mimics grave discourse; and its words, uttered indiscriminately, please by their incongruity, and sometimes excite surprise by their aptness. Willughby tells us of a Parrot, which, when a person said to it, "Laugh, Poll, laugh," laughed accordingly, and the instant after screamed out, "What a fool to make me laugh!" Another, which had grown old with its master, shared with him the infirmities of age. Being accustomed to hear scarcely any thing but the words, "I am sick;" when a person asked it, "How d'ye do, Poll? how d'ye do?" "I am sick," it replied in a doleful tone, stretching itself along, "I am sick."

Dr. Goldsmith says, that a Parrot belonging to King Henry the Seventh, having been kept in a room next the Thames, in his palace at Westminster had learned to repeat many sentences from the boat



POLLY AND HER ENEMIES.

men and passengers. One day, sporting on its perch, it unluckily fell into the water. The bird had no sooner discovered its situation, than it called aloud, "A boat! twenty pounds for a boat!" A waterman, happening to be near the place where the Parrot was floating, immediately took it up, and restored it to the king; demanding, as the bird was a favorite, that he should be paid the reward that it had called out. This was refused; but it was agreed that, as the Parrot had offered a reward, the man should again refer to its determination for the sum he was to receive—"Give the knave a groat," the bird screamed aloud, the instant the reference was made.

Mr. Locke, in his Essay on the Human Understanding, has related an anecdote concerning a Parrot, of which, however incredible it may appear, he seems to have had so much evidence, as at least to have believed it himself. The story is this: During the government of Prince Maurice in Brazil, he had heard of an old Parrot that was much celebrated for answering, like a rational creature, many of the common questions that were put to it So much had been said respecting this bird, that the curiosity of the Prince was roused, and he directed it to be sent for. When he was introduced into the room where the Prince was sitting, in company with several Dutchmen, it immediately exclaimed in the Brazilian language, "What a company of white men are here!" They asked it, "Who is that man?" pointing to the Prince: the Parrot answered, "Some general or other." When the attendants carried it up to him, he asked it, through the medium of an interpreter, (for he was ignorant of its language,) "From what place do you come?" The Parrot answed, "From Marignan." The Prince asked, "To whom do you belong?" It answered, "To a Portuguese." He asked again, "What do you do there?" It answered, "I look after chickens!" The Prince, laughing, exclaimed, "You look after chickens!" The Parrot in answer said, "Yes, I; and I know well enough how to do it;" clucking at the same time, in imitation of the noise made by the hen to call together her young ones.

The females of this species lay their eggs in the hollows of trees; and there is no way of getting at them, except by cutting down and cleaving the trees.

THE YELLOW-WINGED PARROT.

The length of the Yellow-winged Parrot is about thirteen inches. The bill is whitish, and the cere hoary. The general color of the body is green; and the feathers on the hind part of the neck and on the back, have black margins. The forehead is of a whitish-ash color; and the top of the head, cheeks, throat, and forepart of the neck are yellow: the hind head is yellow-green. The thighs and the ridges of the wings are yellow, the remainder of the wings are, in different parts, red, yellow, and green, with the greater quills black. The four middle tail-feathers are green, and yellowish near the end; the others are partly red and partly green. The legs are hoary, and the claws ash-colored. It is a native of South America.

We know nothing respecting the habits of this bird in a state of nature, but Father Bougot, who had one of them for some time in his possession, communicated to M. de Buffon, the following account of its manners and disposition in a tame state:

"It is (he says) extremely susceptible of attachment to its master; it is fond of him, but requires frequent caresses, and seems disconsolate if neglected, and vindictive if provoked. It has fits of obstinacy; it bites during its ill-humor, and immediately laughs, exulting in its mischief. Correction and rigorous treatment only harden it; gentle usage alone succeeds in mollifying its temper.

"The inclination to gnaw whatever it can reach, is very destructive; it cuts the cloth of the furniture, splits the wood of the chairs, and tears in pieces paper, pens, &c. And if it be removed from the spot where it stands, its proneness to contradiction will instantly hurry it back. But this mischievous disposition is counterbalanced by agreeable qualities, for it remembers readily whatever it is taught to say. Before articulating it claps its wings and plays on its roost; in a cage it becomes dejected, and continues silent; and it never prattles well except when it enjoys its liberty.

"In its cheerful days it is affectionate, receives and returns caresses, and listens and obeys; though a peevish fit often interrupts the harmony. It seems affected by the change of weather, and becomes silent; the way to reanimate itis to sing beside it, and it then strives, by its noisy screams, to surpass the voice which excites it. It is fond of children; in which respect it differs from most other Parrots. It contracts a predilection for some of them, and suffers them to handle and carry it; it caresses them, and will bite ferociously any person who then attempts to touch them. If its favorite children leave it, it is unhappy, follows, and calls loudly after them. During the time of moulting it is much reduced, and seems to endure great pain; and this state lasts for nearly three months."

The power of imitating exactly articulate discourse, implies in the Parrot a very peculiar and perfect structure of organ; and the accuracy of its memory (though independent of understanding) manifests a closeness of attention, and a strength of mechanical recollection, that no other bird possesses in so high a degree. Accordingly, all naturalists have remarked the singular form of its bill, of its tongue, and its head. Its bill, round on the outside and hollow within, has, in some degree, the capacity of a mouth, and allows the tongue to play freely; and the sound, striking against the circular border of the lower mandible, is there modified as on a row of teeth, while the concavity of the upper mandible reflects it like a palate; hence the animal does not utter a whistling sound, but a full articulation. The tongue which modulates all sounds, is proportionably larger than in man; and would be more voluble, were it not harder than flesh; and invested with a strong horny membrane.

From the peculiar structure of the upper mandible of its bill, the Parrot has a power, which no other birds have, of chewing its food. The Parrot seizes its food sideways, and gnaws it deliberately. The lower mandible has little motion, but that from right to left is mor

perceptible; and this is often performed when the bird is not eating, whence some persons have supposed it to ruminate. In such cases, however, the bird may be only whetting the edge of this mandible, with which it cuts and bites its aliment.

THE MACAWS.

Many naturalists imagine, and with some reason, that the Psittacidæ ought to be formed into an order by themselves. In this family the construction of the bill is very remarkable. As the curved tip of the bill would prevent the bird from opening it wide enough to admit its food, the upper mandible is united to the skull by a kind of hinge joint, of equal strength and flexibility. When climbing among the branches of trees, or about their cages, the Parrots invariably make great use of their hooked bills in assisting themselves both in ascending and descending. The crossbills have been observed to climb much in the same way.



BLUE AND YELLOW MACAW.

The Parrots are said to be very long lived, some have certainly been known to live upwards of eighty years in captivity, and may be imagined to exceed that period in a wild state.

The Macaws are natives of South America. The blue and yellow Macaw inhabits Brazil, Guiana and Surinam, living principally on the banks of rivers. Of one of the Macaws, the Carolina Parrot, or Parrakeet as Wilson calls it, the following anecdote is told by that enterprising naturalist:—

"Having shot down a number, some of which were only wounded, the whole flock swept repeatedly round their prostrate companions, and again settled on a low tree, within twenty yards of the spot where I stood. At each successive discharge, though showers of them fell, yet the affection of the survivors seemed rather to increase; for, after a few circuits round the place, they again alighted near me, looking down on their slaughtered companions with such manifest symptoms of sympathy and concern, as entirely disarmed me."

Wilson also makes mention of a singular idea, that the brains and intestines of the Carolina Parrot (which lives on cockle-burs) are poisonous to Cats. Why the brains should be so is rather incomprehen-

sible, although we can easily understand that the Parrot might take some substance into its stomach injurious to Cats. Wilson tried the experiment after being repeatedly disappointed of a patient, but came to no conclusion on the subject.



CAROLINA PARROT.

"Having shut up a Cat and her two Kittens, the latter only a few days old, in a room with the head, neck, and the whole intestines of the Parrakeet, I found on the next morning the whole eaten except a small part of the bill. The Cat exhibited no symptom of sickness, and at this moment, three days after the experiment had been made, she and her Kittens are in their usual health. Still however the effect might have been different, had the daily food of the bird been cockle-burs instead of Indian corn."

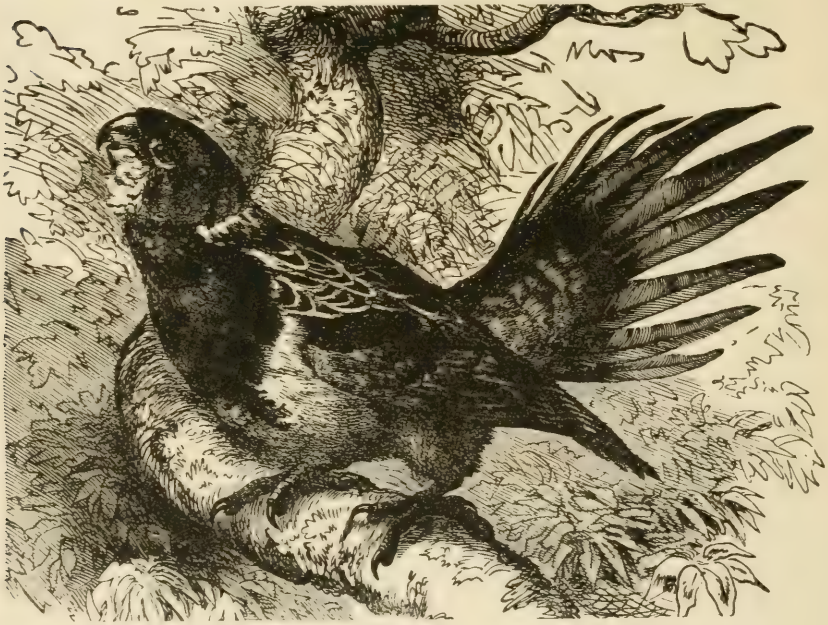
THE RINGED PARRAKEET.

Is frequently seen domesticated in this country, where its pleasing manners and gentle disposition render it a great favorite. It seems to be exceedingly fond of ripe walnuts, divided in halves; and, while it is picking out the kernel, continually utters a short clucking sound indicative of pleasure.

It soon learns to repeat words and short sentences, and to speak with tolerable distinctness. Sometimes when excited, it utters most ear-piercing screams, and always appears to practice any new accomplishment when it thinks that no one is within hearing. A Ringed Parrakeet belonging to one of my scholars was accustomed to live in the school-room. At first it used to become angry that it was not noticed during school-hours, and to utter a succession of screams; but after being shut up in a dark closet several times, it learned to behave very demurely,—giving an example worthy of imitation to several of its human play-fellows. I am sorry to say, that the bird escaped from its cage, and was shot by an ignorant farmer in the neighborhood.

THE COCKATOOS

Are remarkable for the powdery surface of their wings, and the crest on the head, which can be raised or depressed at pleasure. The Sulphur-crested Cockatoo is an inhabitant of New Guinea. Its color is white and the crest is of a sulphur yellow. Its white plumage glancing among the dense dark foliage of its native forests, imparts a wonderful beauty to the scene; and, as Sir Thomas Mitchell remarks, "amidst the umbrageous foliage, forming dense masses of shade, the white Cockatoo sported like spirits of light." This Cockatoo is easily tamed, and is of a very affectionate disposition. When in captivity it has been known to live to the age of one hundred and twenty years. Its nest is built in hollow trees and the crevices of rocks. The eggs are white. The length of the bird is about eighteen inches.



ROSELLA.

The Rosella is a truly splendid bird. Its feathers are of varied colors —scarlet, black, blue, white, green, etc. These beautiful parrots are natives of New South Wales, where they are very common, but only in special districts, often bounded by a brook over which they will not pass. Open countries are their favorite resorts, or grassy hills and plains planted with high trees. Travellers are unanimous in saying that the impression made by the profusion of these magnificent birds surpasses description.

OF THE TOUCANS IN GENERAL.

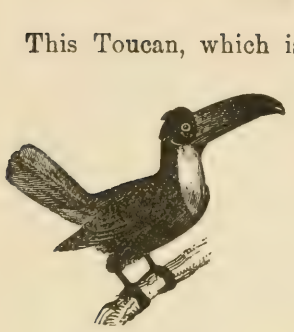
THE beaks of all the Toucans are enormously large and convex; they are bent at the end, hollow, very light, and jagged at the edges. The nostrils are small, round, and situated close to the head. The tongue is long, narrow, and feathered at the edges. The feet are adapted for climbing, and have the toes placed two forward and two backward.



TOUCAN.

These birds are all natives of the hotter parts of South America, where they feed on fruit. They are very noisy, and are generally seen in small flocks of eight or ten in number: they are continually moving from place to place in quest of food, going northward or southward as the fruits ripen. If brought up young they are easily tamed, and in this state are very familiar. They breed in the hollows of trees, frequently in places deserted by Woodpeckers: and the female lays two eggs. It is probable that they have more than one brood in the year.

THE RED-BELLIED TOUCAN.



RED-BELLIED TOUCAN.

This Toucan, which is a native of Guiana and Brazil, is about twenty inches in length. The bill is six inches long, and nearly two inches thick at the base; it is of a yellowish green color, reddish at the tip. The nostrils are at the base of the bill; but are not, as in some of the species, covered with feathers. The principal upper parts of the body, and the throat and neck, are of a glossy black, with a tinge of green: the lower part of the back, the rump, upper part of the tail, and small feathers of the wings, are the same, with a cast of ash color. The breast is orange-color. The belly, sides, thighs, and the short feathers of the tail, are bright red: the remainder of the tail is of a greenish black, tipped with red. The legs and claws are black.

In several parts of South America these birds have the name of Preacher Toucan; from the circumstance of one of the flock being always perched at the top of a tree, above its companions, while they are asleep. This makes a continual noise, resembling ill-articulated sounds, moving its head during the whole time to the right and left, in order, it is said, to deter birds of prey from seizing on them.

They feed chiefly on fruits. The females build their nests in the holes of trees; and no bird better secures its offspring from external injury than this. It has not only birds, men, and serpents to guard against; but a numerous train of Monkeys, which are more prying, mischievous, and hungry, than all the rest. The Toucan, however, sits in its hole, defending the entrance with its great beak; and if the Monkey ventures to offer a visit of curiosity, the Toucan gives him such a welcome, that he is soon glad to escape.*

The Red-bellied Toucans are easily tamed, and, in that state, they will eat of almost any thing that is offered to them. Pozzo, who bred up one of these birds, and had it perfectly domesticated, informs us that it leaped up and down, wagged its tail, and cried with a voice resembling that of a Magpie. It fed upon the same things as Parrots: but was most greedy of grapes. These being plucked off one by one, and thrown to it, it would with great dexterity catch in the air before they fell to the ground. Its bill, he adds, was hollow, and on that

* There appears to be some doubt as to the real strength of the beak of the Toucan. This assertion of M. de Buffon seems to contradict what he has before said of the weakness of this enormous and apparently disproportionate member. Willughby, p. 129, says, that, notwithstanding its extreme lightness, "it is of a bony substance; and therefore is not to be wondered that, dexterously used, it should by many strokes pierce a tree; the bird having, perchance, the instinct to choose a rotten one." It is from this writer that Buffon has derived the latter part of the above account.



account very light, so that the bird had but little strength in this apparently formidable weapon; nor could it peck or strike smartly with it. But its tongue seemed to assist the efforts of this unwieldy machine; it was long, thin, and flat, not much unlike one of the feathers on the neck of a Dunghill-cock; this the bird moved up and down, and often extended five or six inches from the bill. It was of a flesh-color, and remarkably fringed on each side with small filaments.

It is probable that this long tongue has greater strength than the thin hollow beak that contains it; and that the beak is only a kind of sheath for this peculiar instrument, used by the Toucan in making its nest, and in obtaining its provision.

These birds are stated to be in great request in South America; both on account of the delicacy of their flesh, and the beauty of their plumage, particularly the feathers of the breast. The skin of this part the Indians pluck off, and, when dry, glue to their cheeks: they consider these feathers an irresistible addition to their beauty.

THE TOCO TOUCAN.

The Toco Toucan is distinguished by the enormous size of its serrated bill. It is found in Brazil.

The Curl-crested Aracari, found also in Brazil, is distinguished by a crest of curled feathers.

The Toucan family is very numerous, including a great many species, diffused over all the tropical regions of the earth. They all agree, however, in the characteristic of a bill, very large, as compared with the other parts of the bird. This characteristic is so strongly marked, that of all the different species of Toucans, not one would ever be mistaken for a bird of any other class.



TOCO TOUCAN.

The Toco Toucan is principally of a glossy black. The large high beak is bright orange-red, shading to deep red at the culmen; very pretty little powder flasks are made of these finely colored bills. The length of this bird is twenty-two inches. All the species of these birds live in pairs, only exceptionally congregating into small parties.

OF THE HORNBILLS IN GENERAL.

THE nostrils of these birds are small, round, and situated behind the base of the bill. The tongue is small and short. The legs are scaly: the toes placed three forward, and one backward; the middle toe is connected to the outermost, as far as the third joint, and to the innermost, as far as the first.

The animals of this, as well as the last tribe, have all singularly disproportioned bills. Those of the Hornbills are bent, jagged at the edges, and have frequently on the upper mandible, a protuberance, somewhat resembling another bill.

These birds seem to hold the same place on the old continent, as the Toucans do on the new; and probably they subsist on similar food.

THE MALABAR HORNBILL.

This bird is about two feet six inches long, and in bulk somewhat bigger than a Crow. The bill is more than five inches in length, having on its upper part a protuberance rounded at the top, reaching two-thirds of its length, and tending to a sharp edge in front: this extends beyond the eyes, and in the fore part is black. The base and edges of both mandibles, as well as a small portion of the upper part are also black: the general color of both of these is a dingy yellow. The plumage is in general black, some of the feathers inclining, on their margins, to green; but the lower part of the breast, the belly, the thighs, and the tip of the wings and tail, (except one outer feather in each of the former, and the two middle feathers in the latter, which are colored like the rest of the body,) are black. The legs are black, and very short.

In a wild state these extraordinary birds inhabit the great woods of Malabar and the East Indies, where they usually roost on the highest and most inaccessible trees, and in preference, upon the dead and withered branches. The females form their nests in the worm-eaten holes of the trunk, and generally lay four or five dingy white eggs. The young-ones, when first produced, are completely naked, and, for some time, the protuberance on their bill is not more than two or three lines in depth. This, by degrees, increases, but does not attain its full growth until the birds are two years old: their plumage then assumes its proper colors.

The protuberance upon the bill is frequently observed to be injured by the use to which the birds apply it, in beating the branches of trees for the purpose of detaching the bark, in order to discover insects and even small Lizards, which take refuge there, and on which they feed.

In the island of Ceylon these birds are in great request by the inhabitants who carefully rear them in a domestic state from their

propensity to chase and devour Mice and other vermin, of which they clear the houses with as much address as Cats.

One of these birds, which was brought into England some years ago, exhibited several interesting peculiarities in its manners. It would leap forward, or sideways, with both legs at once, like a Magpie or Jay, and never walked. Its general air was rather stupid and dull; though when agitated, it would sometimes put on a fierce look. It would eat lettuce, and some other esculent vegetables, after bruising them with its bill; it would also devour Rats, Mice, small birds or raw flesh. It had different tones of voice on different occasions; sometimes a hoarse sound in the throat, like *ouck, ouck;* at other times a hoarse and weak noise, not unlike the clucking of a Turkey-hen. It used to display its wings, and enjoy itself in the sunshine; but it shivered in the cold. At the approach of winter it died, unable to bear the severity of our climate, so different to its nature from that which it had left.

THE AFRICAN HORNBILL, AND RHINOCEROS HORNBILL.

The length of the African Hornbill is nearly four feet. Its bill is about ten inches long, and the horny protuberance upon it appears as if cut, with an aperture somewhat resembling the form of a club on cards, or an iron lance. This excrescence is of the same substance as the bill, but thinner, and yields to pressure. The aperture is about an inch long, and half an inch wide, having on the inside a black membrane, of use in preventing the introduction of any foreign body into the horn, which communicates interiorly with the head. The general color of the plumage is a sooty black; some of the large feathers of the wings are, however perfectly white.



RHINOCEROS HORNBILL.

The former of these species are found in various parts of Africa, but are not common near the sea-coasts. The females build in large, thick trees, and form a covered nest, like that of a Magpie, but three or four times as large. This is placed firmly

on the trunk, and the entrance to it is always on the east side. They sometimes have as many as eighteen young ones.

These birds, in general, only run along the ground; but, being of a distrustful disposition, they are soon raised by alarm, when they usually fly to a great distance, before they again alight. Their food consists principally of insects and Lizzards. The male and female are always to be seen in company; or sometimes there are two females to one male, but never more. The Negroes esteem this Hornbill sacred, never killing it themselves, and always, if possible, preventing the Europeans from firing at it. They have a superstition that the death of one of these birds gives cold to the whole district. M. Geoffroy, who examined several of them, was observed to kill one: they reproached him with the utmost severity, and every one present put his nose to the excrescence on the bill, in order to secure himself from the injurious consequences which he imagined would attend its death.

THE RHINOCEROS HORNBILL.—The protuberance of the beak of the Rhinoceros Hornbill is so large, and so much recurved, as to appear rather an enormous deformity, than a natural production. This bird is somewhat smaller than a Turkey, and of a black color, except the tail, which is white, and marked with a bar of black. The beak is nearly a foot long, and of a pale yellow color.

These birds which are found in Sumatra and several other parts of the east, feed on flesh and carrion. They are said to follow the hunters, for the purpose of feeding on the entrails of the beasts that are killed. We are told also that they chase rats and mice, and after pressing them flat with their bill, in a peculiar manner, toss them up into the air, and swallow them whole immediately on their descent.

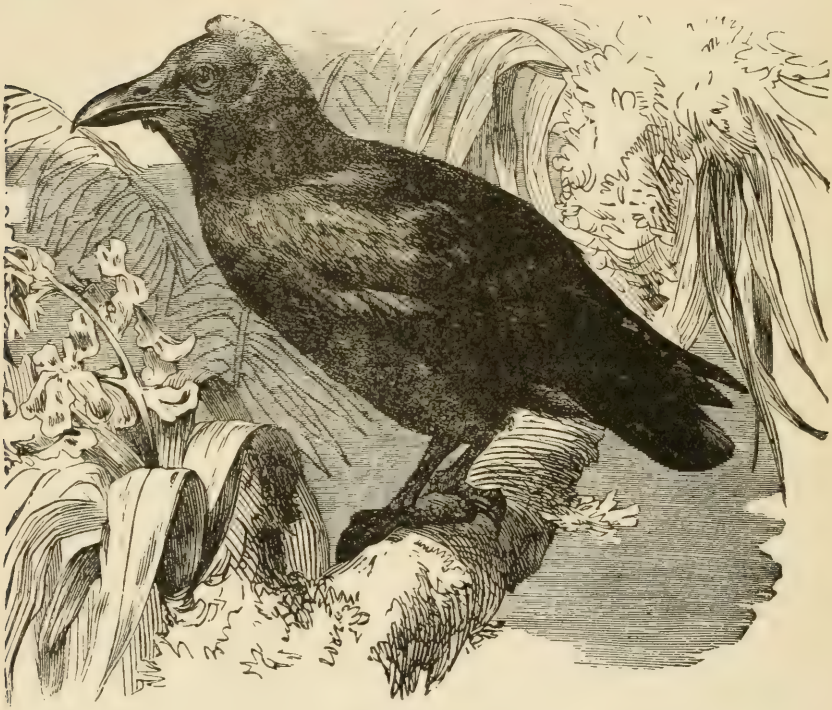
OF THE CROW TRIBE IN GENERAL.

THESE birds have a strong bill; with the upper mandible a little bent, the edges sharp, and, in general, a small notch near the tip. The nostrils are covered with bristles reflected over them; and the tongue is divided at the end. The toes are placed three forward, and one backward; and the middle toe is united to the outer one as far as the first joint.

Few animals are more generally dispersed over the world than the different species of Crow; some of them being found in almost every climate. They are prolific, clamorous, and usually associate in flocks. Most of them make their nests in trees, and the number of young-ones which they produce is five or six. They feed promiscuously on animal and vegetable substances. Some of the species, when in great numbers, are supposed to be injurious to man, by devouring grain; but they make amends for this injury, by the immense quantities of noxious insects and other vermin which they destroy.

THE BALD-HEADED CROW

Belongs to a family regarded as nearly allied to the Manaken, although differing considerably from the latter in the peculiarity of its habits and the superiority of its size, which varies from that of a Crow to that of a Thrush. This bird is recognizable by its powerful body, short neck, moderately long and pointed wings, in which the third quill exceeds the rest in length, short tail, composed of twelve feathers and straight at its extremity. The beak varies somewhat in different groups, but is

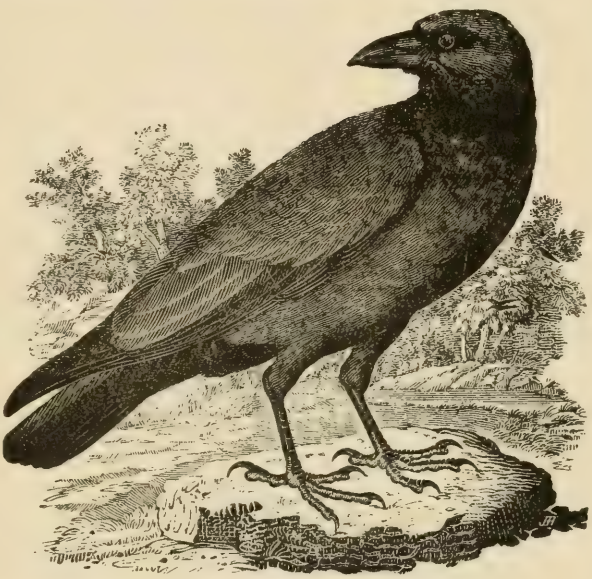


BALD-HEADED CROW.

usually flatly compressed both towards the base and at the hooked lip, which is furnished with a slight cavity for the reception of the end of the lower mandible. The gape extends very far back, nearly to beneath the eyes. The feet, though short and strong, are only fitted for perching, and are seldom employed as means of progression. The plumage is thick, compact, and composed of large feathers, but differs so considerably in different species as to render a general description impossible. In all the members of the family the windpipe is very wide, and furnished on each side with a delicate layer of muscular fibres.

THE RAVEN.

Among the ancients the Raven was esteemed a bird of much importance in augury; and the various changes and modulations of its voice were studied with the greatest attention, and were too often used by designing men to mislead the unwary.



THE RAVEN.

It frequents the neighborhood of great towns; where it is useful in devouring carrion and filth, which it scents at a vast distance. It is a cunning bird, and generally careful in keeping beyond the reach of a gun.

When brought up young, the Raven becomes very familiar; and, in a domestic state, he possesses many qualities that render him highly amusing. Busy, inquisitive, and impudent, he goes everywhere, affronts and drives off the dogs, plays his tricks on the poultry, and is particularly assiduous in cultivating the good will of the cook-maid, who is generally his favorite in the family. But, with these amusing qualities, he often also has the vices and defects of a favorite. He is a glutton by nature, and a thief by habit. He does not confine himself to petty depredations on the pantry or the larder; he aims at more magnificent plunder—at spoils which he can neither exhibit nor enjoy, but which, like a miser, he rests satisfied with having the satisfaction of sometimes visiting and contemplating in secret. A piece of money, a teaspoon, or a ring, is always a tempting bait to his avarice: these he will slily seize upon, and, if not watched, will carry to some hiding-place.

Mr. Montagu was informed by a gentleman, that his butler, having missed many silver spoons, and other articles, without being able to account for the mode in which they disappeared, at last observed a tame Raven that was kept about the house, with one in his mouth, and, on watching him to his hiding-place, discovered there upwards of a dozen more.

Notwithstanding the injury these birds do to the farmer, a popular respect is paid to them, from their having been the birds that fed the prophet Elijah in the wilderness. This prepossession in favor of the Raven is of a very ancient date: the Romans, who thought the bird ominous, paid to it, from motives of fear, the most profound veneration.

A Raven, as Pliny informs us, that had been kept in the Temple of Castor, flew down into the shop of a tailor, who was highly delighted with its visits. He taught the bird several tricks; but particularly to pronounce the names of the emperor Tiberius, and of the whole royal family. The tailor was beginning to grow rich by those who came to see this wonderful Raven; till an envious neighbor, displeased at his success, killed the bird, and deprived the tailor of all his hopes of future fortune. The Romans, however, thought it necessary to take the poor tailor's part; they accordingly punished the man who offered the injury, and gave to the Raven all the honors of a splendid interment.

The female builds her nest early in the spring, in trees, and the holes of rocks; in which she lays five or six bluish-green eggs, spotted with brown. She sits about twenty days: during which time she is constantly attended by the male, who not only furnishes her with abundance of food, but also, whenever she leaves the nest, takes her place.

Of the perseverance of the Raven in the act of incubation, Mr. White has related the following singular anecdote:—In the centre of a grove near Selborne, there stood an oak, which, though on the whole shapely and tall, bulged out into a large excrescence near the middle of the stem. On this tree a pair of Ravens had fixed their residence for such a series of years, that the oak was distinguished by the title of "The Raventree." Many were the attempts of the neighboring youths to get at this nest: the difficulty whetted their inclinations, and each was ambitious of surmounting the arduous task; but, when they arrived at the swelling, it jutted out so in their way, and was so far beyond their grasp, that the boldest lads were deterred, and acknowledged the undertaking to be too hazardous. Thus the Ravens continued to build, nest upon nest, in perfect security, till the fatal day on which the wood was to be levelled. This was in the month of February, when those birds usually sit. The saw was applied to the trunk, the wedges were inserted into the opening, the woods echoed to the heavy blows of the beetle or mallet, the tree nodded to its fall; but still the dam persisted in sitting. At last, when it gave way, the bird was flung from her nest; and, though her parental affection deserved a better fate, was whipped down by the twigs, which brought her dead to the ground.

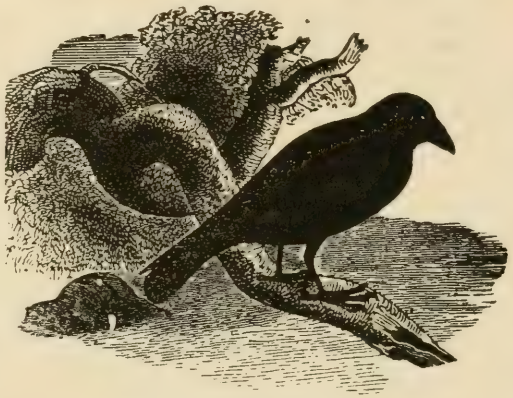
The Raven feeds chiefly on small animals; and is said to destroy Rabbits, young Ducks, and Chickens; and sometimes even Lambs, when they happen to be dropped in a weak state. In the northern regions, it preys in concert with the White Bear, the Arctic Fox, and the Eagle: it devours the eggs of other birds and eats shore-fish, and shell-fish; with the latter it soars into the air, and drops them

from on high to break the shells, and thus to get at the contents. Willughby says, that Ravens may be trained to fowling like hawks.

The faculty of scent in these birds must be very acute; for in the coldest of the winter-days, at Hudson's Bay, when every kind of effluvia is almost instantaneously destroyed by the frost, Buffaloes and other beasts have been killed where not one of these birds was seen; but, in a few hours, scores of them have been found collected about the spot, to pick up the blood and offal.

THE CARRION, OR COMMON CROW.

These birds live chiefly in pairs, in the woods where they build their nests on the trees. The female lays five or six eggs, much like those of the Raven; and, while sitting, is always fed by the male. They feed on putrid flesh of all sorts; as well as on worms, insects, and various kinds of grain. Like the Ravens, they sometimes pick out the eyes of Lambs when just dropped. They also do much mischief in Rabbit-warrens, by killing and devouring the young Rabbits; and Chickens and young Ducks do not always escape their attacks.



CARRION CROW.

Mr. Montagu states, that he once saw a Crow in pursuit of a Pigeon, at which it made several pounces like a Hawk; but the Pigeon escaped by flying in at the door of a house. He saw another strike a Pigeon dead from the top of a barn. It is so bold a bird, that neither the Kite, the Buzzard, nor the Raven, approaches its nest without being driven away. When it has young-ones it will even insult the Peregrine Falcon, and at a single pounce will bring that bird to the ground.

When poultry-hens lay their eggs in hedge-bottoms or stack-yards, Crows are often caught in the act of devouring them. On the northern coast of Ireland, a friend of Dr. Darwin saw above a hundred Crows at once preying upon Muscles: each Crow took a Muscle up into the air twenty or thirty yards high, and let it fall on the stones, and thus, by breaking the shell, got possession of the animal. It is related that a certain ancient philosopher, walking along the sea-shore to gather shells, one of these unlucky birds mistaking his bald head for a stone dropped a shell-fish upon it, and killed at once a philosopher and an Oyster.

The familiarity and audacity of the Crows in some parts of the East is astonishing. They frequent the courts of houses belonging to the Europeans; and, as the servants are carrying in dinner, will alight on the dishes, and fly away with the meat, if not driven off by persons who attend with sticks for that purpose.

In some parts of North America they are extremely numerous, and destroy the new-sown maize by pulling it out of the ground and devouring it. The ripening plants they also injure, by picking holes in the leaves which surround the ears, and thus exposing them to corruption by letting in the rain. The inhabitants of Pennsylvania and New Jersey allowed a reward of three-pence or four-pence a-head for destroying these birds; but the law was soon repealed, on account of the expense which it brought upon the public treasury.

There are at present more of these birds bred in England than in any other country of Europe. In the reign of Henry the Eighth, Crows had become so numerous, and were thought so prejudicial to the farmer, that they were considered an evil worthy of parliamentary redress; and an act was passed for their destruction, in which also Rooks and Choughs were included. Every hamlet was ordered to destroy a certain number of Crows' nest for ten successive years; and the inhabitants were compelled to assemble at stated times during that period, in order to consult on the most proper and effectual means of extirpating them.

The following are modes adopted in some countries for catching these birds:—A Crow is fastened alive on its back firmly to the ground, by means of a brace on each side, at the base of the wings. In this painful position the animal struggles and screams; the rest of its species flock to its cries from all quarters, with the intention, probably, of affording relief. But the prisoner, to extricate himself, grasping at every thing within reach, seizes with his bill and claws, which are left at liberty, all that come near him, and thus delivers them a prey to the bird-catcher. Crows are also caught by cones of paper baited with raw flesh; as the Crow introduces his head to devour the bait, which is near the bottom, the paper, being besmeared with bird-lime, sticks to the feathers of the neck, and he remains hooded. Unable to get rid of this bandage, which entirely covers his eyes, the Crow rises almost perpendicularly into the air, the better to avoid striking against any object; till, quite exhausted, he sinks down near the spot from which he mounted.

If a Crow be put into a cage, and exposed in the fields, his calls generally attract the attention of others that are in the neighborhood, which flock round their imprisoned companion. This plan is sometimes adopted in order to get these birds within gun-shot; for, however shy they may otherwise be, their care is said in this case to be so much occupied on their friend, as to render them almost heedless of the gunner's approach.

Willughby states, that this bird is capable of being taught to articulate words with considerable distinctness. By the ancients it was esteemed a bird of bad omen. The Crow is so rare in Sweden, that Linnæus speaks of it as a bird that he never knew killed in that country but once

THE ROOK.

The Rook is about the size of the Carrion Crow, but its plumage is more glossy. It also differs in having its nostrils and the root of the bill naked: in the Crow, these are covered with bristly hair. This difference arises from the Rook's thrusting its bill continually into the earth, in search of worms and other food.



THE ROOK.

Besides insects, the Rooks feed on different kinds of grain, thus causing some inconvenience to the farmer; but this seems greatly repaid by the good they do to him, in extirpating the maggots of some of the most destructive insects of the Beetle tribe. In some parts of Great Britain, the farmers find it their interest to encourage the breed of Rooks, as the only means of freeing their grounds from the grub which produces the Cock-chafer, and which in this state destroys the roots of corn and grass to such a degree, "that (says Mr. Stillingfleet, one of the most accurate observers of nature which that country ever produced) I have myself seen a piece of pasture-land where you might turn up the turf with your foot." An intelligent farmer in Berkshire informed this gentleman that one year, while his men were hoeing a field of turnips, a great number of Rooks alighted in a part of it where they were not at work. The consequence was a remarkable fine crop in this part, while in the remainder of the field there were scarcely any turnips that year.

These birds are gregarious, being sometimes seen in flocks so great as to darken the air in their flight. They build their nests on high trees, close to each other; generally selecting a large clump of the tallest trees for this purpose. When once settled, they every year frequent the same place. Rooks are, however, bad neighbors to each other; for they are continually fighting and pulling to pieces each other's nests. These proceedings seem unfavorable to their living in such close community: and yet, if a pair offer to build on a separate tree, the nest is plundered and demolished at once. Some unhappy couples are not permitted to finish any nest till the rest have all completed their buildings; for as soon as they arrange a few sticks together, a party comes and demolishes the fabric. It generally happens that one of the pair is stationed to keep guard, while the other goes abroad for materials. From their conduct in these circumstances our cant-word *rooking*, for cheating, originated.

As soon as the Rooks have finished their nests, and before they lay

the cock birds begin to feed the hens. These receive the bounty of their mates with a fondling, tremulous voice, and fluttering wings, and with all the little blandishments that are expressed by the young while in a helpless state. This gallant deportment of the males is continued through the whole season of incubation.

New-comers are often severely beaten by the old inhabitants, (who are not fond of intrusions from other societies,) and are even frequently driven quite away. Of this an instance occurred near Newcastle, in the year 1783. A pair of Rooks, after an unsuccessful attempt to establish themselves in a rookery at no great distance from the Exchange, were compelled to abandon the attempt, and take refuge on the spire of that building; and, though constantly interrupted by other Rooks, they built their nest on the *top of the vane*, and reared their young-ones undisturbed by the noise of the populace below them:—the nest and its inhabitants were of course turned about by every change of the wind. They returned and built their nest every year on the same place, till the year 1793, soon after which the spire was taken down. A small copper-plate was engraved, of the size of a watch-paper, with a representation of the top of the spire and the nest; and so much pleased were the inhabitants and other persons with it, that so many copies were sold as produced to the engraver the sum of ten pounds.

A remarkable circumstance respecting these birds occurred a few years ago at Dallam Tower, in Westmoreland, the seat of Daniel Wilson Esq. There were two groves adjoining to the park, one of which had, for many years, been the resort of a number of Herons, that regularly every year built and bred there. In the other was a large rookery. For a long time the two tribes lived peaceably together. At length, the trees of the heronry were cut down, and the young brood perished by the fall of the timber. The parent birds, not willing to be driven from the place, endeavored to effect a settlement in the rookery. The Rooks made an obstinate resistance; but, after a desperate contest, in the course of which many of the Rooks and some of the Herons lost their lives, the latter at length succeeded in obtaining possession of some of the trees, and that very spring built their nests afresh. The next season a similar conflict took place; which, like the former, was terminated by the victory of the Herons. Since this time, peace seems to have been agreed upon between them; the Rooks have relinquished part of the grove to the Herons, to which part alone they confine themselves; and the two communities appear to live together in as much harmony as they did before the dispute.

The following anecdote of this sagacious community is related by Dr. Percival, in his Dissertations: "A large colony of Rooks had subsisted many years in a grove on the banks of the river Irwell, near Manchester. One serene evening I placed myself within the view of it, and marked with attention the various labors, pastimes, and evolutions of this crowded society. The idle members amused themselves with chasing each other through endless mazes; and, in their flight, they made the air sound with an infinitude of discordant noises. In the midst of these playful exertions, it unfortunately happened that one Rook, by a sudden turn, struck his beak against the wing of

another. The sufferer instantly fell into the river. A general cry of distress ensued. The Birds hovered, with every expression of anxiety, over their distressed companion. Animated by their sympathy, and, perhaps, by the language of counsel known to themselves, he sprang into the air, and by one strong effort, reached the point of a rock which projected into the water. The joy became loud and universal; but, alas! it was soon changed into notes of lamentation; for the poor wounded Bird, in attempting to fly towards his nest, again dropped into the river, and was drowned, amidst the moans of his whole fraternity."

There seems to exist a wonderful antipathy between these birds and the Raven. Mr. Markwick says, that as soon as a Raven had built her nest in a tree adjoining a very numerous rookery, all the Rooks immediately left the spot, and did not return to build there afterwards. At the Bishop of Chester's rookery at Broomham, near Hastings, upon a Raven's building her nest in one of the trees, all the Rooks forsook the spot; they however returned to their haunts in the autumn, and formed their nests there the succeeding year. It is no very difficult task to account for this antipathy. The Raven will scarcely suffer any bird to come within a quarter of a mile of its nest, being very fierce in defending it. It besides seizes the young Rooks from their nests, to feed its own offspring. This Mr. Lambert was an eye-witness to, at Mr. Seymer's at Harford, in Dorsetshire; for there was no peace in the rookery night or day, till one of the old Ravens was killed, and the nest was destroyed.

Rooks begin to build in March; and, after the breeding-season is over, they forsake their nesting-trees, and for sometime roost elsewhere; but they have always been observed to return in August. In October they repair their nests.

When the first brood of Rooks are sufficiently fledged, they leave their nest-trees in the day-time, and resort to some distant place in search of food; but they return regularly every evening in vast flights, to their nests; where, after flying round several times with much noise and clamor, till they are all assembled together, they take up their abode for the night.

Mr. White, in his Natural History of Selborne, speaking of the evening exercises of Rooks in the autumn, remarks, that, just before dusk, they return in long strings from the foraging of the day, and rendezvous by thousands over Selborne Down, where they wheel round, and dive in a playful manner in the air, exerting their voices, which being softened by the distance, become a pleasing murmur, not unlike the cry of a pack of Hounds in deep echoing woods. When this ceremony is over, with the last gleam of light they retire to the deep beech-woods of Tisted and Kepley. We remember (says Mr. White) a little girl, who, as she was going to bed, used to remark, on such an occurrence, in the true spirit of physico-theology, that the Rooks were saying their prayers; and yet this child was much too young to be aware that the Scriptures have asserted of the Deity—that "*He feedeth the Ravens, who call upon him.*"

In the parts of Hampshire adjacent to the New Forest, when the

Rook has reared his progeny, and has carried off such of them as have escaped the arts of men and boys, he retires every evening at a late hour, during the autumn and winter months, to the closest coverts of the forest, after having spent the day in the open fields and enclosures, in quest of food.

Among all the sounds of animal nature, few are more grateful than the cawing of Rooks. The Rook has but two or three notes, and when he attempts a *solo* we cannot praise his song; but when he performs in *concert*, which is his chief delight, these notes, although rough in themselves, being intermixed with those of the multitude, have, as it were, all their rough edges worn off, and become harmonious, especially when softened in the air, where the bird chiefly performs. We have this music in perfection, when the whole colony is raised by the discharge of a gun.

Dr. Darwin has remarked, that a consciousness of danger from mankind is much more apparent in Rooks than in most other birds. Any one who has in the least attended to them, will see that they evidently distinguish that the danger is greater when a man is armed with a gun, than when he has no weapon with him. In the spring of the year, if a person happen to walk under a rookery with a gun in his hand, the inhabitants of the trees rise on their wings, and scream to the unfledged young to shrink into their nests from the sight of the enemy. The country-people, observing this circumstance so uniformly to occur, assert that Rooks can smell gunpowder.

In England these birds remain during the whole year; and both in France and Silecia they migrate.

THE JACKDAW.

Jackdaws are common birds in England, where they remain during the whole year; but in some parts of the Continent they are migratory.



JACKDAW.

They frequent old towers and ruins in great flocks, where they construct their nests; and they have been sometimes known to build in hollow trees, near a rookery, and to join the Rooks in their foraging parties. In some parts of Hampshire, from the great scarcity of towers or steeples, they are obliged to form their nests under-ground, in the Rabbit-holes; they also build in the interstices between the upright and cross stones of Stonehenge, far out of the reach of the shepherd-boys, who are always idling about that place. In the Isle of Ely

from the want of ruined edifices, they often build their nests in chimneys. In the grate below one of these nests, which had not been used for some time, a fire was lighted; the materials of the nest caught fire, and they were in such quantity, that it was with great difficulty the house could be preserved from the flames.

These birds feed principally on worms, and the grubs of insects; but I was once witness to a very singular deviation from their usual mode in this respect. I was walking with a friend in the Inner Temple garden, about the middle of May, 1802, when we observed a Jackdaw hovering, in a very unusual manner, over the Thames. A small barrel was floating near the place, a buoy to a net that some fishermen were hauling; and we at first thought the bird was about to alight upon it. This, however, proved a mistake; for he descended to the surface of the water, and fluttered for a few seconds with his bill and feet immersed; he then rose, flew to a little distance, and again did the same: after which he made a short circuit, and alighted on a barge, about fifty yards from the garden, where he devoured a small fish. When this was done, he made a third attempt, caught another, and flew off with it in his mouth.

Jackdaws are easily tamed; and may, with a little difficulty, be taught to pronounce several words. They conceal such parts of their food as they cannot eat; and often along with it, small pieces of money or toys, frequently occasioning, for the moment, suspicions of theft in persons who are innocent. They may be fed on insects, fruit, grain, and small pieces of meat.

In Switzerland there is found a variety of Jackdaws which has a white ring round its neck. In Norway, and other cold countries, Jackdaws have been seen entirely white.

THE JAY.

This beautiful bird is well known in our woods; it builds, in trees, an artless nest, of sticks, fibres, and twigs, in which it lays five or six eggs. Its delicate cinnamon-colored back and breast, with blue wing coverts, barred with black and white, render it one of the most elegant birds produced in this country. Its bill is black, and chin white; and, on its forehead, there is a beautiful tuft of white feathers, streaked with black, which it has the power of erecting at pleasure. Its voice is harsh, grating, and unpleasant.



THE JAY.

When kept in a domestic state, the Jay may be rendered familiar, and it will catch and repeat a variety of sounds. One of these birds has been heard to imitate so exactly the noise made by the action of a saw, as to induce passengers to suppose that a carpenter was at work in the house.

A Jay kept by a person in the north of England, had learned at

he approach of cattle, to set a Cur-Dog upon them, by whistling and calling him by his name. One winter, during a severe frost, the Dog was by this means excited to attack a Cow, that was big with Calf; when the poor animal fell on the ice, and was much hurt. The Jay was complained of as a nuisance, and its owner was obliged to destroy it.

The young Jays continue with the old ones till the next pairing time; they then choose each its mate, and separate, in order to produce a new progeny. The old birds, when enticing their fledged young ones to follow them, make a noise not unlike the mewing of a Cat.

These birds feed in general on acorns, nuts, seeds, and fruit; and in summer they are often found injurious to gardens, from their devouring peas and cherries. Mr. Wallis, in his Natural History of Northumberland, says, "They come two or three together out of the wood into my little garden at Simonburn, in the raspberry and gooseberry season, and can hardly be frightened away; in loud clamors, from tree to tree, proclaiming it (as it were) to be their own property."

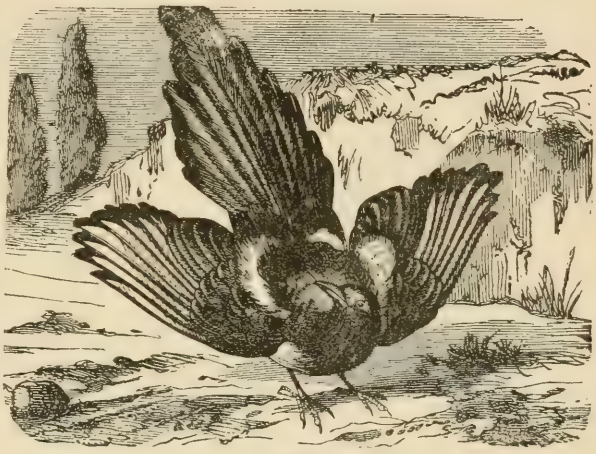
So habitual is the sentinel cry of alarm, and so expressive, that all the birds within call, as well as other wild animals, are instantly on the alert, so that the fowler and hunter become generally disappointed of their game by his garrulence and noisy propensity; he is therefore for his petulance, frequently killed without pity or profit, as his flesh, though eaten, has but little to recommend it. His more complaisant notes, when undisturbed, though guttural and echoing, are by no means unpleasant, and fall in harmoniously with the cadence of the feathered choristers around him, so as to form a finishing part to the general music of the grove. His accents of blandishment, when influenced by the softer passions, are low and musical, so as to be scarcely heard beyond the thick branches where he sits concealed; but, as soon as discovered, he bursts out into notes of rage and reproach, accompanying his voice by jerks and actions of temerity and defiance. Indeed the Jay of Europe, with whom our beau agrees entirely in habits, is so irrascible and violent in his movements, as sometimes to strangle himself in the narrow fork of a branch from which he has been found suspended.

In times of scarcity he falls upon carrion, and has been known to venture into the barn, through accidental openings; when as if sensible of the danger of purloining, he is active and silent, and if surprised, postponing his garrulity, he retreats with noiseless precipitation, and with all the cowardice of a thief. The worst trait of his appetite, however, is his relish for the eggs of other birds, in quest of which he may frequently be seen prowling, and with a savage cruelty he sometimes also devours the callow young, spreading the plaint of sorrow and alarm wherever he flits. The whole neighboring community of little birds, assembled at the cry of distress, sometimes, however, succeed in driving off the ruthless plunderer, who not always content with the young, has been seen to attack the old, though with dubious success; but to the gallant and quarrelsome King-bird, he submits like a coward, and driven to seek shelter, even

on the ground, from the repeated blows of his antagonist, sneaks off, well contented to save his life.

THE MAGPIE.

Like the Crow, this bird feeds on almost all substances animal as well as vegetable, that come in its way. It forms its nest with great art; leaving a hole in the side for admittance, and covering the whole upper part with a texture of thorny branches closely entangled, by which a retreat is secured from the rude attacks of other birds; the inside is furnished with a sort of mattress, composed of wool and other soft materials, on which the young-ones, which are generally seven or eight in number, repose.



MAGPIE.

It is a crafty, and, in a tame state, a familiar bird; and may be taught to pronounce not only words, but short sentences, and even to imitate any particular noise that it hears.

Plutarch relates a singular story of a Magpie belonging to a barber at Rome. This bird could imitate, to a wonderful extent, almost every noise that it heard. Some trumpets happened one day to be sounded before the shop; and for a day or two afterwards the Magpie was quite mute, and seemed pensive and melancholy. This surprised all who knew it; and they supposed that the sound of the trumpets had so stunned the bird, as to deprive it at the same time both of voice and hearing. This, however, was not the case; for, says this writer, the bird had been all the time occupied in profound meditation, and was studying how to imitate the sound of the trumpets: accordingly, in the first attempt, it perfectly imitated all their repetitions, stops and changes. This new lesson, however, made it entirely forget every thing that it had learned before.

In certain districts of Norway, the Magpie is so uncommon a bird, that its appearance is considered a sign of the approaching death of some principal person in the neighborhood. In England also it is esteemed a bird of omen. In the north of England, one of these birds flying by itself is accounted a sign of ill luck; two together forbode something fortunate; three indicate a funeral; and four, a wedding.

THE RED-LEGGED CROW.

The color of this Crow is a fine blue or purple black; and its bill and legs are of a bright and deep orange.

The Red-legged Crow is a very tender bird, of elegant form and unable to bear severe weather. Active, restless, and meddling, it is not to be trusted where things of consequence lie. It is much taken with glittering objects; and is apt to snatch up bits of lighted sticks, so that instances have occurred of houses having been set on fire by it. The injury that it does to thatched houses is sometimes very great, for, tearing holes into them with its long bill, in search of worms and insects, the rain is admitted, and quickens their decay. It also often picks out lime from walls, in search of spiders and flies.

These birds commonly fly very high, and they make a more shrill noise than the Jackdaw. The Cornish peasantry attend so much to them, that it is very common to see them tame in their gardens. They shriek out aloud at the appearance of any thing strange or frightful; but, when applying for food, or desirous of pleasing those who usually fondle them, their chattering is very soft and engaging.

When tame, they are very docile and amusing; and they are extremely regular to their time of feeding. But, however familiar they may be to their immediate friends, they will not permit a stranger to touch them.

Their nests are built about the middle of the cliffs, or in the most inaccessible parts of ruins. The eggs, which are four or five in number, are somewhat longer than those of the Jackdaw, and of a cinereous white color, marked with irregular dusky blotches. From their being very tender, these birds are seldom seen abroad except in fine weather.

THE CINEREOUS CROW.

This bird is so small as seldom to weigh more than two or three ounces. Its plumage is brown-gray The feathers are long, soft, and silky, and in general so much unwebbed, as, in many parts of the body, to resemble hair.

The Cinereous Crow, which is a native of North America, and is extremely common in the neighborhood of Hudson's Bay, is a very familiar bird, and is fond of frequenting habitations, either houses or tents. But so much is it given to pilfering, that no kind of provisions it can come at, either fresh or salted, is safe from its depredations. It is so bold as to come into tents, sit on the edge of the kettle when hanging over the fire, and steal victuals out of the dishes.

Few creatures are more troublesome to the hunters than these. They will sometimes follow them a day together: will perch on a tree while the hunter is baiting his martin-traps, and as soon as his back is turned, will go and eat the baits. The Cinereous Crows are easily tamed, but they never live long in confinement.

The care that this bird takes in laying up in summer a stock of

fruit for winter provision, when no fruit is to be had abroad, is a remarkable instance of foresight in the bird tribe. Its nest is built in trees, and is not unlike the nest of the Blackbird and Thrush. The female lays four blue eggs, but seldom hatches more than three young ones. These birds breed early in the spring. They sometimes steal flesh, but never eat it, feeding principally on fruit, moss, and worms.

THE HOODED CROW

The Hooded Crow, otherwise called the Royston Crow or the Grey Crow, is rather a scarce bird in the British Islands, although scattered over nearly every portion of Great Britain, even including Scotland.



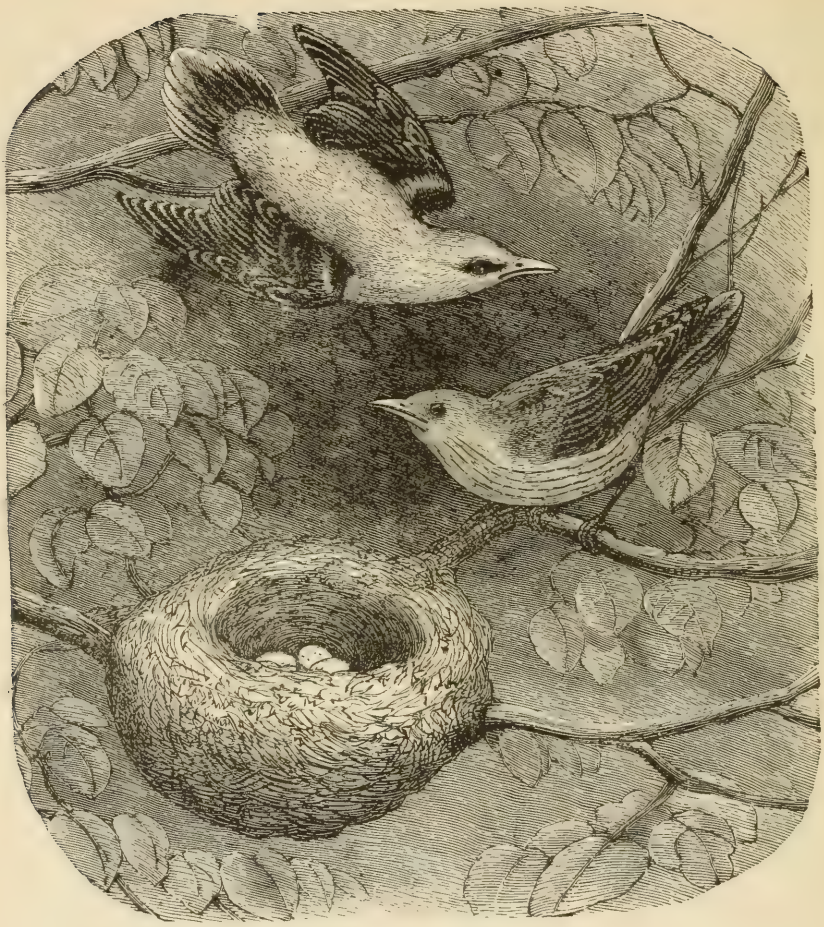
HOODED CROW.

It is one of the winter visitors to England, generally leaving there about April, although it sometimes remains during the summer, and brings up a brood of young. Like most of its congeners, it builds its nest on the tops of very tall trees, such as the pine, but is also known to build on precipitous rocks. It is said to use these rocks in the stead of an oyster-knife, for as it is very fond of Oysters, and does not possess a knife to open them with, it must discover some other method of getting at the enclosed animal. To attain this purpose, it is said to seize the Oyster in its beak, soar up to a great height in the air, and to let the Oyster drop from that elevation upon the hard rock, when the shell is dashed to pieces, and the Crow is enabled to pick out the animal with ease.

There is but little of the usual Corvine black hue about this bird, only the head, throat, wings and tail being so decorated, the remainder of the bird being of an ashy grey. The length of the bird is about twenty-two inches.

OF THE ORIOLES IN GENERAL.

The characteristics of this tribe are, a straight, conic, sharp-pointed bill; with the mandibles equal in length, and the edges sharp and inclining inward. The nostrils are small: they are situated at the base of the bill, and are partly covered. The tongue is cleft at the end. The toes stand three forward and one backward, and the middle one is joined near the base to the outer toe.



GOLDEN ORIOLE.

This is a noisy, gregarious, and voracious race; and is confined almost exclusively to America. Most of the species form pendulous nests upon the exterior branches of trees, which secure them from rapacious animals. Several nests are constructed on one tree. The Orioles in general feed on fruit, but some of them subsist on insects and grain.

THE RED-WINGED ORIOLE.

This bird is about the size of a Starling, being nearly nine inches long. In some parts of America these birds appear in such immense flocks that frequently, at one draw of a net, more than three hundred are caught. Their common name in America is *Maize-thief:* they seldom attack the maize except just after it is sown, or when the ear becomes green: then, pecking a hole in the side, the rain is

admitted, and the grain spoiled. They are supposed to do this in search of insects. The farmers sometimes attempt their destruction, by steeping the maize before it is sown, in a decoction of white hellebore: the birds that eat this prepared corn, are seized with a vertigo, and fall down stupified. They are so bold and voracious, that a flock of them may frequently be shot at two or three times before they can be driven off; indeed it often happens, that during the second loading of the gun their number increases.

Catsby informs us, that in Carolina and Virginia, these birds breed in swampy places, among the rushes; the points of which they weave so as to form a sort of roof or shed, under which they build their nest, at so judicious a height, that it can never be reached even by the highest floods. Dr. Latham states, that they build between the forks of trees, three or four feet from the ground, in swamps which are seldom penetrable by man.

They are easily caught in traps; and can, without difficulty, be rendered tame, and even taught to speak. They are fond of singing; and are exceedingly playful, either when confined or when suffered to run about the house. With the liveliness and familiarity which they possess, it is said to be highly diverting to place these birds before a looking-glass, and observe their strange and whimsical gesticulations: sometimes they erect the feathers of the head, and hiss at the image; then, lowering their crest, they set up their tail, quiver their wings, and strike at it with their bills. Whether taken young or old, they become immediately tame. It is not unusual to keep them in cylindrical cages with bells; and these cages they turn round in the same manner as Squirrels do. But when they have been confined in a cage for some years, they are said to become white, and so stupid and inanimate, as at last not to be able to feed themselves.

THE ICTERIC ORIOLE, AND WEAVER ORIOLE.

The cteric Oriole is, in size, somewhat smaller than a Blackbird · of a tawny color, with the head, throat, back, quill, and tail-feathers black. The wings have each a white spot.



ICTERIC ORIOLE.

It is a native of Carolina and Jamaica.

The chief food of the Icteric Oriole consists of insects; and, for the purpose of killing these, the Americans domesticate and keep this bird in their houses. It hops about in a similar manner to the Magpie; and has many other gestures of that bird. Albin states, that, in all its actions, it resembles the Starlings; and adds, that sometimes four or five of them will unite to attack a larger bird, which, after they have killed, they eat in a very orderly manner, each choosing his part according to his valor. In a wild state the



Icteric Orioles are so fierce and bold, that, when disturbed, they will attack even mankind; but, when introduced into our society, they are said to be easily tamed.

Their nests are constructed in a cylindrical form; several on the same tree, and suspended from the extremity of the branches, where they wave freely in the air. In these situations they are far out of the reach of such animals as would otherwise destroy the young-ones. Several other species construct their nests in a similar manner.

THE WEAVER ORIOLE.

This bird is of a yellow color; the head is brown, with a golden shade, and the quill and tail-feathers are blackish, edged with orange. It is chiefly found in Senegal, and some other parts of Africa.

Of two females of the *Weaver Oriole*, which were brought some years ago from Senegal to England, it was observed, that, being kept together in a cage, they entwined among the wires some of the stalks of the pimpernal, with which they were fed. As this seemed to show a disposition for forming a nest, some rushstalks were put into the cage. Of these they presently made a large nest; but it was as often deranged as made, the work of one day being spoiled the next. This seemed to prove that the fabrication of the nest in a state of nature, is the work of both male and female, and that the female is not able to finish this important structure by herself.

A bird of this species having, by accident, obtained a thread of sewing-silk, wove it among the wires of its cage; and, on being supplied with more, it interlaced the whole very confusedly, so as to prevent most part of that side of the cage from being seen through. It was found to prefer green and yellow silks to those of any other color.

THE OVEN BIRD.

In South America there is a bird that builds its nest of clay and shapes it something like an oven; and for this reason it has been called the "Oven Bird."

This curious bird in building his nest of the wet clay by the river banks, mixes in grass and straw to keep it in shape until the sun bakes it nearly as hard as brick. The nest has two chambers. In the inner one, which is nearly dark, the mother bird lays her eggs on downy feathers and then hatches her young. The Oven Bird is slenderly built and about the size of a Lark.



OVEN BIRD.

OF THE BIRDS OF PARADISE IN GENERAL.

The Birds of Paradise have their bills slightly bent, and the base clad with velvet-like feathers. The nostrils are small, and covered The tail consists of ten feathers; the two middle ones of which, in several of the species, are very long, and webbed only at the base and tips. The legs and feet are large and strong; having three toes forward and one backward, and the middle toe connected to the outer one as far as the first joint.

No class of birds has given rise to more fables than this. By different writers we are taught to understand that they never touch the ground, from the time of their exclusion from the egg, to their death; that they live wholly on *dew*, and that they are produced without legs; that, when they sleep, they hang themselves by the two long feathers of the tail, to the branch of a tree; that the female produces her eggs in the air, which the male receives in an orifice in his body, where it is hatched; and a thousand other stories that are too absured even to be mentioned.

The whole race, as far as we are at present acquainted with them, are natives of New Guinea, whence they migrate into the neighboring islands. Their plumage is in general of extremely brilliant colors.

THE GREATER BIRD OF PARADISE.

The general color of these birds is chestnut, with the neck of a gold-green beneath. The feathers of the back and sides are considerably longer than those of the body. They have two long tail feathers, which are straight and taper to the tip.

There are two varieties of this species, both of which inhabit the islands of Arrou. They are supposed to breed in New Guinea, and to reside there during the wet monsoon; but they retire to the Arrou islands, about a hundred and forty miles eastward, during the dry or western monsoon.

They always migrate in flocks of thirty or forty, and have a leader, which the inhabitants of Arrou call the king. He is said to be black, to have red spots, and to fly far above the flock, which never desert him, but always settle in the same place that he does. They never fly with the wind, as in that case their loose plumage would be ruffled and blown over their heads; and a change of wind often compels them to alight on the ground, from which they cannot rise without difficulty. When surprised by a heavy gale, they soar to a higher region, beyond the reach of the tempest. There, in a serene sky, they float at ease on their light flowing feathers, or pursue their journey in security. During their flight they cry like Starlings; but when a storm blows in their rear, they express their distressed situation by a note somewhat resembling the croaking of a Raven. In calm weather great numbers of these birds may be seen flying, both in companies and singly, in pursuit of the larger butterflies and other insects on which they feed. They never willingly alight, except on the highest trees.





BIRD OF PARADISE.

Their arrival at Arrou is watched by the natives, who either shoot them with blunt arrows or catch them by means of bird-lime or in nooses. When caught, they make a vigorous resistance and defend themselves stoutly with their beaks. After being killed, the entrails and breast-bone are taken out and they are dried with smoke and sulphur for exportation to Banda, where they are sold for half a rix-dollar each. Thus prepared they are sent to all parts of India and Persia, to adorn the turbans of persons of rank and even the trappings of the horses. Not long ago, they formed an additional ornament to the head-dresses of the British fair.

The scapulary feathers of the Superb Bird of Paradise form a long spreading plume, which can be elevated at pleasure, and there are two pointed lappets on the chest, which are of the most brilliant steel-green. The color of the other plumage is velvet black, with green and violet.

OF THE CUCKOO TRIBE IN GENERAL.

THESE birds have their bill weak, and more or less bending. The nostrils are bounded by a small rim; and the tongue is short and pointed. The toes are situated two forward and two backward. The tail is wedge-shaped, and consists of ten soft feathers.

The different species of Cuckoos are scattered through the four quarters of the globe, but they are much more common in the hot than in temperate or cold climates. One species only is found in Great Britain.

THE COMMON CUCKOO.

The Cuckoo is about fourteen inches in length, and twenty-five in breadth. The bill is black, strong, and somewhat curved. The upper parts of the plumage are chiefly of a dove-color; the throat is pale grey; and the breast and belly are white, crossed with undulated lines of black. The vent feathers are of a buff-color, marked with a few dusky spots. The two middle tail feathers are black, tipped with white. The plumage of the young birds is chiefly brown, mixed with ferruginous and black.



COMMON CUCKOO.

The Cuckoo visits us early in the spring. Its well-known cry is generally heard about the middle of April, and ceases about the end of June: its stay is short, the old Cuckoos being said to quit this country early in July. These birds are generally supposed to build no nest; but, what is also extraordinary, the female Cuckoo deposits her solitary egg in the nest of another bird, by which it is hatched. The nests she chooses for this purpose are generally those of the Hedge Sparrow, Water-Wagtail, Titlark, Yellow-Hammer, Green Linnet, or

Winchat: but of these it has been observed, that she shows the greatest partiality to the nest of the Hedge-Sparrow.

We are indebted to the observations of Dr. Jenner, for the following account of the habits and economy of this singular bird, in the disposal of its egg. He states that, during the time the Hedge-Sparrow is laying her eggs, which generally occupies four or five days, the Cuckoo contrives to deposit her egg among the rest, leaving the future care of it entirely to the Hedge-Sparrow. This intrusion often occasions some disorder; for the old Hedge-Sparrow, at intervals, while she is sitting, not only throws out some of her own eggs, but sometimes injures them in such a way, that they become addle, so that it frequently happens, that not more that two or three of the parent-bird's eggs are hatched: but, what is very remarkable, it has never been observed that she has either thrown out or injured the egg of the Cuckoo. When the Hedge-Sparrow has set her usual time, and has disengaged the young Cuckoo and some of her own offspring from the shell, her own young-ones, and any of her eggs that remain unhatched, are soon turned out: the young Cuckoo then remains in full possession of the nest, and is the sole object of the future care of the foster-parent. The young birds are not previously killed, nor are the eggs demolished; but they are left to perish together, either entangled in the bush that contains the nest, or lying on the ground beneath it. On the 18th of June, 1787, Dr. Jenner examined a nest of a Hedge-Sparrow, which then contained a Cuckoo's and three Hedge-Sparrow's eggs. On inspecting it the day following, the bird had hatched: but the nest then contained only a young Cuckoo and one young Hedge-Sparrow. The nest was placed so near the extremity of a hedge, that he could distinctly see what was going forward in it; and, to his great astonishment, he saw the young Cuckoo, though so lately hatched, in the act of turning out the young Hedge-Sparrow. The mode of accomplishing this was curious; the little animal, with the assistance of its rump and wings, contrived to get the bird upon its back, and, making a lodgment for its burden by elevating its elbows, climbed backward with it up the side of the nest, till it reached the top; where, resting for a moment, it threw off its load with a jerk, and quite disengaged it from the nest. After remaining a short time in this situation, and feeling about with the extremities of its wings, as if to be convinced that the business was properly executed, it dropped into the nest again. Dr. Jenner made several experiments in different nests, by repeatedly putting in an egg to the young Cuckoo; but this he always found to be disposed of in the same manner. It is very remarkable, that nature seems to have provided for the singular disposition of the Cuckoo, in its formation at this period; for, different from other newly-hatched birds, its back, from the scapulæ downward, is very broad, with a considerable depression in the middle, which seems intended for the express purpose of giving a more secure lodgment to the egg of the Hedge-Sparrow or its young-one, while the young Cuckoo is employed in removing either of them from the nest. When it is about twelve days old, this cavity is quite filled up, the back assumes the shape of that of nestling birds in general, and at that time the dispo

sition of turning out its companion entirely ceases. The smallness of the Cuckoo's egg, which in general is less than that of the House-Sparrow, is another circumstance to be attended to in this surprising transaction, and seems to account for the parent Cuckoo's depositing it in the nests of such small birds only as have been mentioned. If she were to do this in the nest of a bird that produced a larger egg, and consequently a larger nestling, the design would probably be frustrated; the young Cuckoo would be unequal to the task of becoming sole possessor of the nest, and might fall a sacrifice to the superior strength of its partners.

Dr. Jenner observes, that the eggs of two Cuckoos are sometimes deposited in the same nest: he gives the following instance, which fell under his observation. Two Cuckoos and a Hedge-sparrow were hatched in the same nest; one Hedge-Sparrow's egg remained unhatched. In a few hours a contest began between the Cuckoos for possession of the nest; and this continued undetermined till the afternoon of the following day, when one of them, which was somewhat superior in size, turned out the other, together with the young Hedge-Sparrow, and the unhatched egg. The contest, he adds, was very remarkable: the combatants alternately appeared to have the advantage, as each carried the other several times, nearly to the top of the nest, and again sank down, oppressed by the weight of its burden; till at length, after various efforts, the strongest of the two prevailed, and was afterwards brought up by the Hedge-Sparrow.

No reason can be assigned, from the formation of this bird, why, in common with others, it should not build a nest, incubate its eggs, and rear its own offspring; for it is in every respect perfectly formed for all these offices. To what cause then may we attribute the above singularities? May they not be owing to the following circumstances? —the short residence this bird makes in the country where it is destined to propagate its species, and the necessity that exists of its producing, during that short residence, a numerous progeny. The Cuckoo's first appearance in England, is about the middle of April: its egg is not ready for incubation till some weeks after its arrival, seldom before the middle of May. A fortnight is taken up by the sitting bird in hatching the egg. The young bird generally continues three weeks in the nest before it can fly, and the foster-parents feed it more than five weeks after this period; so that, if a Cuckoo should be ready with an egg much sooner than the time pointed out, not a single nestling would be fit to provide for itself before its parent would be instinctively directed to seek a new residence, and be thus compelled to abandon its offspring; for the old birds take their final leave of this country the first week in July.

"There seems (says Dr. Jenner) no precise time fixed for the departure of young Cuckoos. I believe they go off in succession, probably as soon as they are capable of taking care of themselves; for although they stay here till they become nearly equal in size, and in growth of plumage, to the parent, yet in this very state the fostering care of the Hedge-Sparrow is not withdrawn from them. I have frequently seen the young Cuckoo of such a size, that the Hedge-Sparrow has perched

on its back, or on its half-expanded wing, in order to gain sufficient elevation to put the food into its mouth. At this advanced age it is probable that the young Cuckoos procure some food for themselves: like the young Rook, for instance, which in part feeds itself, and is partly fed by the old ones, till the approach of the pairing season."

The same instinctive impulse which directs the Cuckoo to deposit her eggs in the nests of other birds, directs her young-one to throw out the eggs and young of the owner of the nest. The scheme of nature would be incomplete without it; for it would be difficult, if not impossible, for the birds destined to find nourishment for the Cuckoo, to find it also for their own young-ones, after a certain period; nor would there be room for them all to inhabit the nest.

The above are certainly well-attested instances of the Cuckoo's laying its eggs in the nests, and trusting its young to the protection of other birds; but there are instances, equally well attested, of their hatching and feeding their own nestlings. The Rev. Mr. Stafford, one day walking in Blossopdale, in Derbyshire, saw a Cuckoo rise from its nest; which was on the stump of a tree that had been some time felled. In this nest there were two young Cuckoos; one of which he fastened to the ground by a peg and line; and, for many days beheld the old Cuckoo feed them. Mr. Daines Barrington, who recorded this account, had been informed of two other instances of Cuckoo's nests, in which the proper parents fed their young; the one within four miles of London, and the other on the south-west coast of Merionethshire.

It has been conjectured by some persons, that, during winter, the Cuckoo remains in England, hidden in hollow trees, and in a torpid state. In support of this opinion, Mr. Willoughby, in his Ornithology, relates the following story: "The servants of a gentleman in the country, having stocked up, in one of the meadows, some old, dry, rotten willows, thought proper, on a certain occasion, to carry them home. In heating a stove, two logs of this timber were put into the lower part, and fire was applied as usual. But soon, to the surprise of the family, was heard the voice of a Cuckoo, chirping three times from under the stove. Wondering at so extraordinary a cry in winter-time, the servants drew the willow logs from the furnace, and in the midst of one of them they saw something move; when, taking an axe, they opened the hole, and, thrusting in their hands, first they plucked out nothing but feathers; afterwards they got hold of a living animal, and this was the Cuckoo that the fire had awaked. It was, indeed, (continues our historian,) brisk and lively, but wholly naked and bare of feathers, and without any winter provision in its hole. This Cuckoo the boys kept two years afterwards alive in the stove; but whether it repaid them with a second song, the author of the tale has not thought fit to inform us."

A few years ago a young Cuckoo was found, in a torpid state, in the thickest part of a furze bush. When taken up, it soon exhibited signs of life, but was quite destitute of feathers. Being kept warm, and carefully fed, it grew and recovered its coat. In the ensuing spring it made its escape; and, in flying across the river Tyne, was heard to give its usual call.

It would be wrong to assert as a general fact, that Cuckoos remain torpid in England during winter, because half a dozen (or perhaps not so many) instances are recorded of their having been found in this state. We are much rather led to suppose, that these accidental occurrences have arisen from their being young birds, which had not been strong enough to leave us at the usual time of migration, and which had therefore sought for shelter and warmth in the places where they have been discovered.

It is supposed that there are more male Cuckoos than females: Mr. Pennant observes, that five male birds were caught in a trap in one season; and Dr. Latham says, that out of about half a dozen that he had examined, chance never directed him to a female. The males alone being vocal, may, however, be one cause why our specimens are chiefly of this sex; their note directing the gunner to take aim, whilst the female is secured by her silence.

The young birds, though helpless and foolish for a great length of time, may be, and often are, brought up tame, so as to become familiar. In this state they will eat bread and milk, fruits, insects, eggs, and flesh either cooked or raw; but in a state of nature, they are supposed to live principally on Caterpillars. When fat, they are said to be as good eating as the Land-rail.

THE BEE CUCKOO, OR MOROC.

The Bee Cuckoo, in its external appearance, does not much differ from the common Sparrow: except that it is somewhat larger, and of a lighter color: it has also a yellow spot on each shoulder, and the feathers of its tail are dashed with white.

To this bird is ascribed the faculty of discovering and pointing out to man, and to the quadruped called the Ratel, the nests of wild Bees. It is itself exceedingly fond both of honey, and of the Bee maggots; and it knows that when a nest is plundered, some of the honey must fall to the ground, which consequently comes to its share; but, in general, a part is purposely left by the plunderers, as a reward for its services. The way in which this bird communicates to others the discovery it has made, is as surprising as it is well adapted to the purpose.

The morning and evening are its principal meal-times; at least, it is then that it shows the greatest inclination to come forth, and with a grating cry of *cheer, cheer, cheer,* to excite the attention of the Ratel, as well as of the Hottentots and colonists, of whose country it is a native. Somebody then generally repairs to the place whence the sound proceeds; when the bird, continually repeating its cry of *cheer, cheer, cheer,* flies on slowly, and by degrees, towards the quarter where the swarm of Bees has taken up its abode. The persons thus invited accordingly follow; taking care at the same time not to frighten their guide by any unusual noise, but rather to answer it now and then with a soft and gentle whistle, by way of letting the bird know that its call is attended to. When the Bees' nest is at some distance, the bird often makes long stages or flights, waiting for its sporting com-



CUCKOO.

panions between each flight, and calling to them again to come on; but it flies to shorter distances, and repeats its cry more frequently and with greater earnestness, in proportion as they approach nearer to the nest. When the bird has sometimes, in consequence of its great impatience, got too far ahead of its followers, but particularly when, on account of the unevenness of the ground, they have not been able to keep pace with it, it has flown back to meet them, and with redoubled cries has denoted still greater impatience, upbraiding them, as it were, for being so tardy. When it comes to the Bee's nest, whether built in the cleft of a rock, in a hollow tree, or in some cavity of the earth, it hovers over the spot for a few seconds; after which it sits in silence, and for the most part concealed, in some neighboring tree or bush, in expectation of what may happen, and with a view of receiving its share of the booty. It is probable that this bird always hovers, more or less, in the manner just mentioned, over the Bees' nest, before it hides itself; though the people do not always pay attention to this circumstance: at at all events, however, one may be assured that the Bees' nest is very near when, after the bird has guided its followers to some distance, it is on a sudden silent.

Having, in consequence of the bird's directions, found and plundered the nest, the hunters, by way of acknowledgment, usually leave to the bird a considerable share of that part of the comb in which the young Bees are hatching; and which is probably to it the most acceptable morsel.

The above account of Dr. Sparrman has undergone some severe though ill-natured animadversions, from the pen of Mr. Bruce. I shall insert them in his own words. "I cannot (he says) conceive that, in a country where there are so many thousand hives there was any use for giving to a bird a peculiar instinct or faculty of discovering honey, when, at the same time, nature hath deprived him of the power of availing himself of any advantage from the discovery; for man seems in this case to be made for the service of the Moroc, which is very different from the common or ordinary course of things: man certainly needs not this bird; for on every tree and on every hillock he may see plenty of honey at his own deliberate disposal. I cannot then but think, with all submission to these natural philosophers, (Dr. Sparrman, and Jerome Lobo, who has also given an account of this bird,) that the whole of this is an improbable fiction: nor did I ever hear a single person in Abyssinia suggest, that either this, or any other bird, had such a property. Sparrman says it was not known to any inhabitant of the Cape, any more than that of the Moroc was in Abyssinia; it was a secret of nature, hid from all but these two great men, and I most willingly leave it among the catalogue of their particular discoveries."

Dr. Sparrman says, that a nest which was shown to him as belonging to this bird, was composed of slender filaments of bark, woven together in the form of a bottle: the neck and opening hung downwards; and a string, in an arched shape, was suspended across the opening, fastened by the two ends, perhaps for the bird to perch on.

Mr. Barrow, who in the years 1797 and 1798 travelled into the interior of the southern extremity of Africa, fully confirms the truth of Dr. Sparrman's account. He says, that every one there is too well acquainted with the Moroc to have any doubt as to the certainty, either respecting the bird, or its mode of giving information concerning the repositories of the Bees. He tells us further, that it indicates to the inhabitants with equal certainty, the dens of Lions, Tigers, Hyænas, and other beasts of prey and noxious animals. M. Le Vaillant says that the Hottentots are very partial to the Moroc, on account of the service it renders them; and that, once, when he was about to shoot one, they on that account begged him to spare its life.

THE SPURRED CUCKOO.

This strange bird is found in Africa, the East Indies and the Malay Islands. It possesses a very powerful and much curved beak, which is compressed at its sides; the tarsi are high, and toes comparatively short; the hinder toe is armed with a very long and almost straight spur-like claw. The extremely harsh plumage is similarly coloured in both sexes. Their powers of flight are limited and only employed in cases of danger.

OF THE WOODPECKERS IN GENERAL.

The bill is straight, strong, and angular; and at the end, in most of the species, is formed like a wedge, for the purpose of piercing the trees. The nostrils are covered with bristles. The tongue is very long, slender, cylindrical, bony, hard, and jagged at the end. The toes are placed two forward, and two backward; and the tail consists of ten hard, stiff, and sharp-pointed feathers.

The Woodpeckers are a very singular race of birds, that live almost entirely on insects, which they pick out of decayed trees, and from the bark of such as are sound. These they transfix and draw from the crevices by means of their tongue, which is bony at the end, barbed, and furnished with a curious apparatus of muscles, for the purpose of throwing it forward with great force. Their bill is also so strong and powerful, that by means of it they are able to perforate even such trees as are perfectly sound. In the holes which they thus make, they construct their nests. Their voice is acute, and very unpleasant.

THE BLACK WOODPECKER.

This bird weighs about eleven ounces. Its plumage is black, except the crown of the head, which is of a rich crimson. The head of the female is only marked with red behind.



BLACK WOODPECKER.

It inhabits Switzerland, Germany, and several of the northern regions; and is migratory. It is also quite common in this country.

The Black Woodpecker subsists on insects, which it catches on the bark of trees, or between the bark and the wood. It darts out its long tongue, sometimes three or four inches beyond its bill, transfixes the insects with the end, and then with a very quick motion retracts it and swallows them. The feathers of the tail are very stiff; and so firmly set into the rump, that, when the bird has fastened its claws into the inequalities of the bark, he places his strong tail-feathers against it, and thus standing as it were erect, forms a hole by means of his bill. He is able to pierce not only sound, but even hard trees, as the oak and hornbeam. The hole thus made is enlarged within, for the greater convenience of depositing its nest. The damage that the Black Woodpecker does to timber by this means is very great.

The female lays two or three white eggs. This bird has a very loud note; and feeds on caterpillars and insects.

THE WHITE-BILLED WOODPECKER.

This species is about the size of a crow. The bill is white, three inches long, and channelled. On the head is a red pointed crest: the head itself and the body in general are black; but the lower part of the back, the rump, and upper tail coverts, are white. From the eye a white stripe arises, and passes, on each side of the neck, down to the back.

The White-billed Woodpecker is found in Carolina, Virginia, and other parts of North America.

The Spanish settlers of South America have given to the White-billed Woodpecker the name of Carpenter, from the noise that it makes with its bill against the trees in the woods. This is heard at a great distance; and when several of these birds are at work together, the sound is not much unlike that proceeding from woodmen or carpenters. This Woodpecker rattles its bill against the sides of the orifice, till even the woods resound. A bushel of chips, a proof of its labors, is often to be found at the foot of the tree. On examination its holes have been generally found of a winding form, the better to protect the nest from the effects of the weather.

The Canadian Indians make a kind of coronet with the bills of these birds, by setting them in a wreath with the points outward; and for this purpose they will purchase them at the rate of two or three buckskins per bill.

THE RED-HEADED WOODPECKER.

This species is about nine inches long. The bill is about an inch and a quarter in length, of a lead color with a black tip. The head and neck are of a most beautiful crimson; the back and wings are black, the rump, breast, and belly, white; the first ten quills are black, the eleventh black and white, and the rest white with black shafts. It inhabits Carolina, Canada, and most other parts of North America; migrating southwards, according to the severity of the weather.

In various parts of America these Woodpeckers are extremely common: and few animals can be more destructive than they are, in maize-fields and orchards. They attack the trees in flocks, and eat so much of the fruit that nothing but the skin is left. In some years they are much more numerous than in others. A premium of four cents per head was formerly paid from the public funds of some of the States, in order, if possible, to extirpate the breed: but this has of late been much neglected.

They remain during the whole year in Virginia and Carolina, but are not seen in such numbers in winter as during summer. In the winter they are very tame; and they are frequently known to come into the houses, in the same manner as the Redbreast does in England.

These Woodpeckers, like the other species, build their nests in holes, which they form in the trees; and it is said that the noise they make with their bills in this operation, may be heard more than a mile. Their flesh is by many people accounted good eating.

THE WRYNECK.

The bill of the Wryneck is roundish, slightly curved, and weak. The nostrils are bare of feathers, and somewhat concave. The tongue is long, slender, and armed at the point. There are are ten flexible feathers in the tail; and the feet are formed for climbing, the toes being placed two backward and two forward. This bird is about the size of a lark, and its plumage consists of different shades of brown, elegantly blended together. The tail-feathers are of a pale ash-color, marked with black and red, and having four equi-distant bars of black.



THE WRYNECK.

This bird (for there is only one ascertained species of its tribe) is well known in most parts of England. In the form of its tongue and toes it resembles the Woodpeckers, but the slenderness of the bill prevents its being arranged amongst them.

The female builds an artless nest in the hole of a tree, and deposits in it eight or ten perfectly white eggs. Dr. Derham informs us, that although these birds are far from being any way terrible, yet when in danger, they have such singular contortions of their neck, and such odd motions with their head, that, when he was a boy, he used to be so much alarmed at them, that he was deterred from either taking their nests or touching the birds, daring no more to venture his hands into their holes, than if a Serpent had lodged in them. The young ones, while in the nest, will also hiss like Snakes; which may afford an additional preventive against the nest being plundered.

Their food consists principally of Ants and other insects, of which they find great abundance lodged in the bark and crevices of trees. They also frequent grass-plots and Ant-hills; into which they dart their tongues, and from which they draw out their prey. Mr. White, in his Naturalist's Calendar, tells us that these are so long as to coil round their heads.

The manners of this species were minutely examined by taking a female from her nest, and confining her in a cage for some days. A quantity of mould, with Ants and their grubs, was given to her; and it was curious to observe the tongue darted forward and retracted, with such velocity, and such unerring aim, that it never returned without either an Ant or a grub adhering to its viscous extremity, and not transfixed by it as is generally supposed. While feeding, the body was altogether motionless; the head only being turned; and the motion of the tongue so rapid, that the grubs, which were of a light color, and were more conspicuous than the tongue, had somewhat the appearance

of moving to the mouth by attraction, as a small particle of iron flies to a magnet. The bill was rarely used, except to remove the mould in order to get more readily at the insects. Where the earth was hollow, the tongue was thrust into the cavities, in order to rouse the Ants: for this purpose the horny extremity is very serviceable, as a guide to it into the interior.

The Wryneck is a solitary bird, never being seen in any other society than that of its own mate: and even this is only transitory; for as soon as the domestic union is dissolved, which is in the month of September, each retires and migrates by itself, and does not return till the ensuing spring. The voice of these birds is very much like that of the smaller species of Hawks. They also sometimes make a noise like a Grasshopper.

OF THE NUT-HATCH TRIBE IN GENERAL.

THE characters of this tribe are, a bill for the most part straight, having, on the lower mandible, a small angle: small nostrils, covered with bristles: a short tongue, horny at the end and jagged: toes placed three forward and one backward; the middle toe joined closely at the base to both the outer; and the back toe as large as the middle one.

In the habits and manners of the different species of Nut-hatch, we observe a very close alliance to the Wood-peckers. Most of them feed on insects; and some on nuts, whence their appellation has been acquired.

THE EUROPEAN NUT-HATCH.

The length of this bird is five inches and three-quarters. The bill is strong and straight, about three-quarters of an inch long; the upper mandible is black, and the lower white. All the upper parts of the body are of a bluish gray: the cheeks and chin are white; the breast and belly pale orange color; and the quills dusky. The tail is short; and consists of twelve feathers, the two middle ones of which are gray, the two outer spotted with white, and the rest dusky. The legs are pale yellow; the claws are large, and the back one very strong.



NUT-HATCH.

The Nut-hatch, the Squirrel, and the Field-mouse, which all live much on hazel-nuts, have each a curious way of getting at the kernel. Of the two latter, the Squirrel after rasping off the small end, splits the shell in two with his long fore-teeth, as a man does with his knife; the Field-mouse nibbles a hole with his teeth, as regular as if it were drilled with a whimble, and yet so small that one would wonder how the kernel could be extracted through it; while the Nut-hatch picks an irregular ragged hole with his bill; but, as he has no paws to hold the nut firm while he pierces it, he, like an adroit workman, fixes it, as it were in a vice, in some cleft of a tree, or in some crevice; when,

standing over it, he perforates the stubborn shell. On placing nuts in the chink of a gate-post where Nut-hatches have been known to haunt, it has always been found that these birds have readily penetrated them. While at work they make a rapping noise, which may be heard at a considerable distance. Dr. Plott informs us that this bird, by putting its bill into a crack in the bough of a tree, sometimes makes a loud sound, as if the branch were rending asunder. Besides nuts, it feeds also on Caterpillars, Beetles and various other insects.

The female deposits her eggs, six or seven in number, in some hole of a tree, frequently in one that has been deserted by the Woodpecker, or rotten wood mixed with moss. If the entrance be too large, she nicely stops up part of it with clay, leaving only a small hole for herself to pass in and out. While the hen is sitting, if a stick be put into the hole she hisses like a snake; and she is so much attached to her eggs, that she will sooner suffer any one to pluck off the feathers than fly away. During the time of incubation, she is assiduously attended by the male who supplies her with food. If the barrier of plaster at the entrance of the hole be destroyed whilst these birds have eggs, it is speedily replaced; this is a peculiar instinct, to prevent the nest from being destroyed by Woodpeckers and other birds of superior size and strength, which build in similar situations.

The Nut-hatch is supposed not to sleep perched (like most other birds) on a twig; for it has been observed, that when kept in a cage, notwithstanding it would perch now and then, yet at night it generally crept into some hole or corner to sleep: and it is remarkable that when perched, or otherwise at rest, it had mostly the head downward, or at least even with the body, and not elevated like other birds.

These are shy and solitary birds. Like the Woodpeckers they frequent woods, and run up and down the trees with surprising facility. They often move their tail in the manner of the Wagtail. They do not migrate; but, during the winter, they approach nearer to inhabited places, and are sometimes seen in orchards and gardens.

OF THE KINGFISHER TRIBE IN GENERAL.

THE bill is sharp, triangular, long, straight and thick. The tongue is fleshy, short, flat and sharp. The feet, except in a few species, are formed for climbing, with the toes two backward and two forward.



These birds frequent the banks of rivers; living principally on fish, which they catch with great dexterity. They swallow their prey whole but afterwards throw up the indigestible parts. Their wings are short; yet they fly very swiftly.

THE COMMON KINGFISHER.

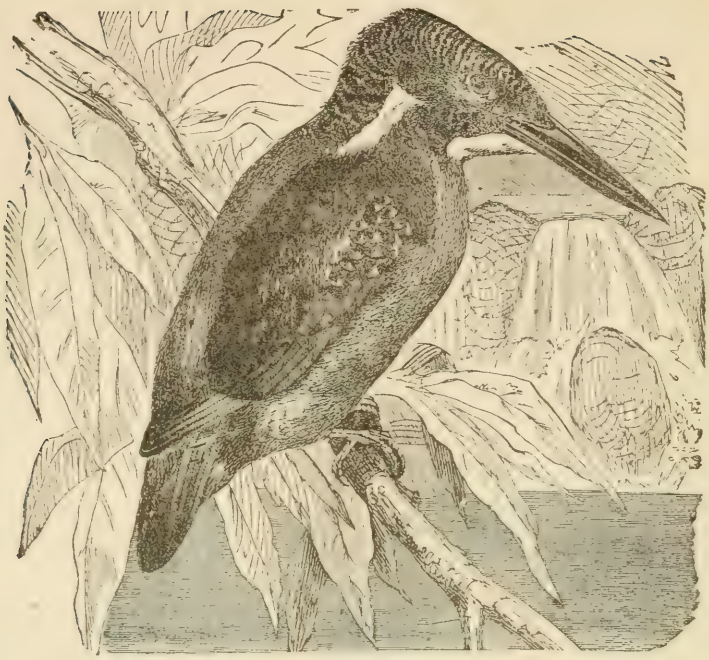
The length of the Kingfisher is seven inches, and its breadth eleven. The bill is nearly two inches long, and black; but the base of the lower mandible is yellow. The top of the head, and the sides of the body, are of a dark green, marked with transverse spots of blue. The tail is of a deep blue; and the other parts of the body are of a dusky orange, white, and black. The legs are red.

In the beauty and brilliancy of its plumage, the Common Kingfisher far excels all the other species of British birds. Its shape is, however, somewhat inelegant, from the great disproportion there is, in size, between the head and bill, and the other parts of the body.

Its usual prey consists of the smaller kinds of fish. It frequently sits on a branch projecting over the current: there it remains motionless, and often watches whole hours, to catch the moment when a little fish rises to the surface of the water under its station; it dives perpendicularly into the water, where it continues several seconds, and then brings up the fish, which it carries to land, beats to death, and afterwards swallows.

When the Kingfisher cannot find a projecting bough, it sits on some stone near the brink, or even on the gravel; but the moment it perceives the fish, it takes a spring upward, of twelve or fifteen feet, and drops perpendicularly from that height. Often it is observed to stop short in its rapid course, and remain stationary, hovering (in a manner not unlike some of the Hawk tribe) over the same spot for several seconds. Such is its mode in winter, when the muddy swell of the stream, or the thickness of the ice, constrains it to leave the rivers, and ply along the sides of the unfrozen brooks. At each pause it continues, as it were, suspended at the height of fifteen or twenty feet; and, when it would change its place, it sinks, and skims along within a foot of the surface of the water, then rises and halts again. This repeated and almost continual exercise, shows that the bird dives for many small objects, fishes or insects, and often in vain; for in this way it passes over many a league.

"Kingfishers (says Mr. Gmelin) are seen all over Siberia; and their feathers are employed by the Tartars and the Ostiacs for many superstitious uses. The former pluck them, cast them into water, and carefully preserve such as float; and they pretend, that if with one of these feathers they touch a woman, or even her clothes, she must fall in love with them. The Ostiacs take the skin, the bill, and the claws, of this bird, and shut them in a purse; and, as long as they preserve this sort of amulet, they believe that they have no ill to fear. The person who taught me this means of living happy, could not forbear shedding tears; he told me that the loss of a Kingfisher's skin that he had, caused him to lose also his wife and his goods. I observed, that such a bird could not be very rare, since a countryman of his had brought me one, with its skin and feathers; he was much surprised, and said that if he had the luck to find one, he would give it to no person."



KINGFISHER.

The Kingfisher lays its eggs, to the number of seven or more, in a hole in the bank of the river or stream that it frequents. Dr. Heysham had a female brought alive to him at Carlisle, by a boy, who said he had taken it the preceding night when sitting on its eggs. His information on the subject was, that "having often observed these birds frequent a bank upon the river Peteril, he had watched them carefully, and at last he saw them go into a small hole in the bank. The hole was too narrow to admit his hand; but, as it was made in soft mould, he easily enlarged it. It was upwards of half a yard long: at the end of it, the eggs, which were six in number, were placed upon the bare mould, without the smallest appearance of a nest." The eggs were considerably larger than those of the Yellow-hammer, and of a transparent white color. It appears from a still later account than this, that the direction of the holes is always upward; that they are enlarged at the end; and have there a kind of bedding formed of the bones of small fish, and some other substances, evidently the castings of the parent animals. This bedding is generally about half an inch thick, and mixed with earth. There is reason to believe, that both male and female come to this spot for no other purpose than to eject the refuse of their food, for some time before the latter begins to lay: and that they dry it with the heat of their bodies; as they are frequently known to continue in the hole for hours, long before the period for laying On this disgorged matter the female deposits and hatches her eggs.

OF THE CREEPER TRIBE IN GENERAL.

The bills of these birds are curved, slender, and pointed. The tongue is generally sharp, fringed, or tubular. The legs are strong, and formed with three toes forward.

The Creepers are dispersed through most countries of the globe. They feed chiefly on insects, in search of which they run up and down the stems and branches of trees. Most of the species breed in hollows of trees, where they lay many eggs.

THE COMMON CREEPER, AND RED CREEPER.

The bill of the Common Creeper is hooked; and its legs are slender, with the claws very long, to enable it to creep up and down the bodies of trees in search of insects. Its color is a mixed gray, with the under parts white. The quill-feathers of the wings are brown, and several of them are tipped with white. The tail is long, and consists of twelve stiff feathers.



CREEPERS.

It is found both in Europe and Asia; and is also very common in some parts of North America, particularly in the neighborhood of Philadelphia.

Except the Humming-bird, this is the smallest of all the feathered tribes; its weight being no more than five drachms. The length of its feathers, and the manner that it has of ruffling them, give it, however, an appearance much beyond its real size. It is a bird which seems peculiarly fond of the society of man; and in some parts of the world it is often protected by his interested care. From observing its utility in destroying insects, it has long been a custom, with the inhabitants of many parts of the United States, to fix a small box at the end of a long pole, in gardens and about houses, as a place for it to build in. In these boxes the animals form their nests, and hatch their young-ones; which the parent birds feed with a variety of different insects, particularly those species that are injurious in gardens. A gentleman, who was at the trouble of watching these birds, observed that the parents generally went from the nest and returned with insects from forty to sixty times in an hour, and that, in one particular hour, they carried food no fewer than seventy-one times. In this business they were engaged during the greatest part of the day. Allowing twelve hours to be thus occupied, a single pair of these birds would destroy at least six hundred insects in the course of one day, on the supposition that the two birds took only a single insect each time. But it is highly probable that they often took more.

I suspect that this is the bird which Mr. St. John, in his Letters of an American farmer, has called a *Wren*, and of which he records the following story.—Three birds had built their nests almost contiguous to each other. A Swallow had affixed hers in the corner of a piazza next his house; a bird which he calls a Phebe in the other corner; and a Wren possessed a little box, which he had made on purpose, and hung between. These were all quite tame. The Wren had for some time, shown signs of dislike to the box which had been given to it, though it was not known on what account. At length, however, small as it was, it resolved to drive the Swallow from its habitation; and, astonishing to say, it succeeded. "Impudence." says Mr. St. John, "gets the better of modesty; and this exploit was no sooner performed, than the Wren removed every material to its own box, with the most admirable dexterity. The signs of triumph appeared very visible; it fluttered its wings with uncommon velocity; and an universal joy was preceptible in all its movements. The peaceable Swallow, like the passive Quaker, meekly sat at a small distance, and never offered the least opposition. But no sooner was the plunder carried away, than the injured bird went to work with unabated ardor, and in a few days the depredations were repaired." Mr. St. John, to prevent any repetition of the same violence, removed the Wren's box to another part of the house.

The Creeper hatches twice during the summer, and has generally from eighteen to twenty eggs at a time.

The Alpine Creeper is principally of an ash-grey tint; the quills are decorated with white or yellow spots, and the tail feathers are bordered with white. "This bird," writes Jerdon, "is found throughout the Himalayas. It looks very beautiful when flitting about, the fine red on its wings fully displayed, and, indeed, has more the appearance of a butterfly than a bird. This species has no call-note. In Europe it descends from the Alps, and is found on walls of old buildings, whence the name, given by Linnæus. It is stated to breed in clefts and holes of rocks and in old buildings. The eggs we are told are of a fine bright red."

THE RED CREEPER.

This diminutive inhabitant of New Spain, smaller than even the last-mentioned species, I mention merely for the purpose of describing its nest; which, differing, in this respect, from those of most of the other species of Creepers, is pensile.

The nest is formed not unlike a chemist's retort placed with the mouth downward, through which the bird ascends to its offspring in the bulb at the top. Its length is fourteen or sixteen inches; and it is suspended to the most extreme and tender branches of the trees, by means of a kind of woven work, of similar materials to the exterior of the nest. In the broadest part of the bulb, it measures about six inches in diameter. Within it is lined with soft and downy materials, to guard the bodies of the tender young-ones from injury and it is altogether so very light, as to be driven about by the most gentle breeze.

OF THE HUMMING-BIRDS IN GENERAL.

THE characters of this tribe are, a slender, weak bill, in some species curved, in others straight; the nostrils are minute: the tongue is very long, and formed of two conjoined cylindrical tubes: the legs are weak: the toes placed three forward and one backward: and the tail consisting of ten feathers.



THE HUMMING-BIRD.

The Humming-birds are the most diminutive of all the feathered tribes. They are natives of the warmer parts of America, and of some of the West-India islands; and bear a great resemblance to each other in manners. Their principal food, is the nectar at the bottom of tubular-shaped flowers: this they extract, while on wing, by means of their long and slender bill. Their name is derived from the humming noise they make with their wings. They are gregarious; and construct an elegant hemispherical nest, in which they lay two small white eggs, that are hatched by the sitting of the male and female alternately, The young-ones are often attacked and devoured by Spiders. These birds may be caught by blowing water upon them from a tube; or, like many of our small birds, they may be shot with sand. Small as they are, they are extremely bold and pugnacious. Their colors are too brilliant to be expressed by any pencil.

THE RED-THROATED HUMMING-BIRD

The length of this diminutive creature is somewhat more than three inches; of which its bill occupies three quarters of an inch. The male is of a green-gold color on the upper part, with a changeable copper gloss; and the under parts are gray. The throat and forepart of the neck are of a ruby color, in some lights as bright as fire. When viewed sideways, the feathers appear mixed with gold, and beneath they are of a dull garnet color. The two middle feathers of the tail are similar in color to the upper plumage, and the rest are brown.

The female, instead of the bright ruby throat, has only a few obscure brown spots; and all the outer tail-feathers, which in the male are plain, are in the female tipped with white.

This beautiful little creature is as admirable for its vast swiftness in the air, and its manner of feeding, as for the elegance and brilliancy of its colors. It flies so swiftly, that the eye is incapable of following its course; and the motion of its wings is so rapid, as to be imper-



RED-THROATED HUMMING-BIRDS AND NEST.

ceptible to the nicest observer. Lightning is scarcely more transient than its flight, nor the glare more bright than its colors.

It never feeds but upon the wing, suspended over the flower from which it extracts nourishment; for its only food is the honeyed juice lodged in flowers, and this it sucks through the tubes of its curious tongue. Like the bee, having exhausted the honey of one flower, it wanders to the next in search of new sweets. It admires most those

flowers that have the deepest tubes; and in the countries which these birds inhabit, whoever sets plants of this description before his windows, is sure to be visited by great numbers of them. It is very entertaining to see them swarming around the flowers, and trying every tube by putting in their bills. If they find that their brethren have anticipated them, and robbed the flower of its honey, they will pluck it off in a rage, and throw it on the ground; and sometimes they tear it in pieces.



SICKLE BILLED HUMMING-BIRD.

The most violent passions animate at times these diminutive creatures. They have often dreadful contests, when numbers of them happen to dispute the possession of the same flower. They tilt against one another with such fury, as if they meant to transfix their antagonists with their long bills. During the fight they frequently pursue the conquered birds into the apartments of houses where the windows are left open; they take a turn round the room, as flies do in England; and then suddenly regain the open air. They are fearless of mankind; and, in feeding, will suffer persons to come within two yards of them; but, on a nearer approach, they dart away with wonderful swiftness.

Fernandez Oviedo, an author of great repute, speaks, from his own knowledge, of the spirited conduct even of these diminutive birds, in defence of their young-ones: "When they observe any one climbing a tree in which they have a nest, they attack him in the face, attempting to strike him in the eyes; and coming, going, and returning, with almost incredible swiftness."



HUMMING-BIRDS AND NEST.

The Humming-Bird is seldom caught alive; a friend of M. du Pratz had, however, this pleasure. He had observed one of these birds enter the bell of a convolvulas; and, as it had quite buried itself to get at the bottom, he ran immediately to the place, closed the flower, cut it from the stalk, and carried off the bird a prisoner. He could not, however, prevail with it to eat; and it died in the course of three or four days.

Carlevoix informs us, that, in Canada, he had possession of one of these birds for about twenty-four hours. It suffered itself to be handled; and even counterfeited death that it might escape. A slight frost in the night destroyed it.



HUMMING-BIRD AT REST.

"My friend Captain Davis informs me," says Dr. Latham, in his Synopsis of Birds, "that he kept these birds alive for four months by the following method:—He made an exact representation of some of the tubular flowers, with paper fastened round a tobacco-pipe, and painted them of a proper color: these were placed in the order of nature, in the cage in which the little creatures were confined: the bottoms of the tubes

were filled with a mixture of brown sugar and water as often as emptied; and he had the pleasure of seeing them perform every action; for they soon grew familiar, and, though close under the eye, took their nourishment in the same manner as when ranging at large in the open air."

The tongue of the Humming-Bird is formed much like that of the Woodpecker, being curled round the head, under the skin, and thus capable of being darted to a considerable distance.

There is a fable of a Wren and an Eagle. The two birds entered into a contest respecting the height to which they could severally attain. A day was fixed, and the birds started. Away went the Eagle, soaring in lessening spires, until his form was lost in the clouds. But where was the Wren? The Eagle had lost sight of his pigmy opponent long ago, but in his pride to show what he could do, he still soared on and on, until the lighter air would scarcely bear his weight. As he hovered with wearied and rapidly beating wings, unable to gain another yard, up sprang the wren from among the Eagle's feathers, where it had sat very comfortably all the while, and fluttered above his head with a song of triumph.

But truth, as has been often said, is stranger than fiction, as appears from the fact that the Eagle can be vanished by a more insignificant foe than even the Wren, by the Humming-Bird, which is not content with a mere racing victory, but drives the Eagle before it. The Ruby-throated Humming-Bird has been seen to dart between the wings of a flying Eagle, to perch upon its head, deliberately to strip off the feathers, and send them floating in a stream after the flight of the persecuted Eagle, which seemed almost driven to madness by its tiny foe.

Like many other little creatures, the assurance and impudence of the Humming-bird is remarkable. It is easily tamed for that very reason, and has been known to domesticate itself in an hour from the time of its capture, and even when released, it has returned again to partake of the dainties which it had tasted during its captivity.

THE WHITE-FOOTED ROCKET-TAIL.

"This species," says Gould, "enjoys a range of habitat over the Columbian Andes, from the third to the tenth degree of north latitude, but appears to be confined to the region ranging between 5,000 and 9,000 feet above the level of the ocean; it is abundant in the neighborhood of Santa Fé de Bogota, and numerous in Galapan, between La Guayra and the Caraccas." Mr. Dyson informs me that, when hovering before a flower, the action of its wings is exceedingly rapid, that it produces a loud humming sound, and the large spatules at the end of the outer tail-feathers show very conspicuously, being kept in continual motion by the rapid movements of the bird, and the repeated closing and expanding of its tail; its white-booted legs are equally noticeable. It is strictly an inhabitant of the hills, and loves to examine the flowers growing in open passes and glades of the forest for its insect



THE WHITE-FOOTED ROCKET-TAIL.

food, which it procures from the highest trees, as well as from branches near the ground. During its flight, it passes through the air with arrow-like swiftness, the tail being carried in a horizontal position.

Mr. Gosse gives the following interesting account of one of the many attempts he made to rear two young males of this beautiful species: "The subjects of this experiment were not confined in a cage, but kept in a room with doors and windows close shut. They were lively, but not wild; playful towards each other, and tame with respect to myself, sitting unrestrained for several seconds at a time on my finger. I collected a few flowers, placed them in a vase on a high shelf, and to these they resorted immediately; but I soon found that they paid attention to none but a certain plant. I then went out and gathered a large quantity of them, and was pleased to observe that on entering the room one flew to my nosegay and sucked while I held it in my hand."

PASSERINE BIRDS.

The birds of this order have their bills of a conical form, and pointed at the end; and the feet are formed for perching and hopping, the toes being slender and divided, with slender, bent, and sharp claws.

OF THE STARE TRIBE IN GENERAL.

In the present tribe the bill is straight, and depressed. The nostrils are guarded above by a prominent rim. The tongue is hard and cloven; and the middle toe is connected to the outermost as far as the first joint.

There are, belonging to this tribe, about twenty known species, some of which are found exclusively upon the Old, and others on the New Continent. They chiefly feed on insects and worms.

THE STARLING.

Few Birds are more generally known than the Starling. It is an inhabitant of almost all climates, and is common in every part of England.

In the winter season Starlings collect in vast flocks, and may be known at a great distance by their whirling mode of flight; which M. de Buffon compares to a sort of vortex, in which the collective body performs a uniformly circular revolution, and at the same time continues to make a progressive advance. The evening is the time when Starlings assemble in the greatest numbers, and betake themselves to the fens and marches. In the fens of Lincolnshire they collect in myriads, and do great damage to the inhabitants by roosting on the reeds, (the thatch of that country,) and breaking them down by their weight.



STARLING.

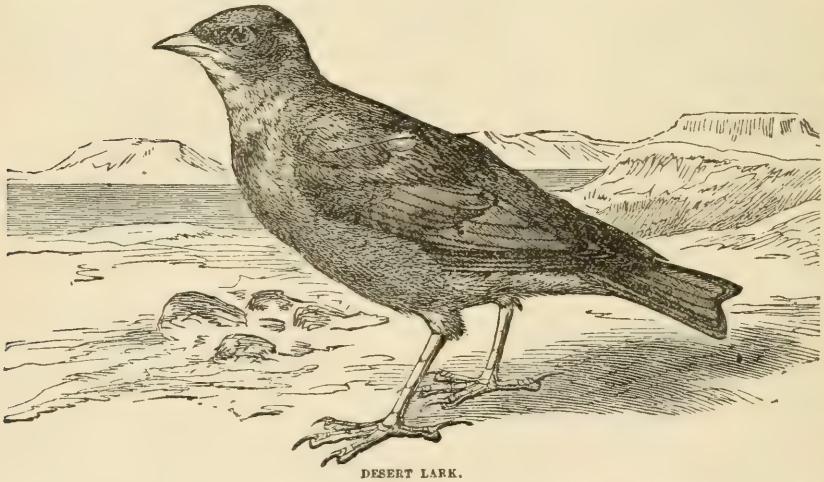
They chatter much in the evening and morning, both when they assemble and disperse. So attached are they to society, that they not only join those of their own species, but also birds of different kinds, and are frequently seen in company with Redwings, Fieldfares, and even with Owls, Jackdaws, and Pigeons. Their principal food consists of Snails, Worms, and insects: they likewise eat various kinds of grain, seeds, and fruit, and are said to be particularly fond of cherries. It is

reported of them that they get into pigeon-houses for the purpose of sucking the eggs.

The female builds an artless nest of straw and small fibres, in the hollows of trees, rocks, or old walls, and sometimes in cliffs that overhang the sea. She lays four or five eggs, of a pale greenish-ash color.

The Starling is a familiar bird, and in a state of captivity is easily trained. Its natural voice is strong and hoarse; but it may be taught, without difficulty, to repeat short sentences, or to whistle tunes with great exactness. In a state of confinement it will eat small pieces of raw flesh, or bread soaked in water.

This well-known harmless inhabitant of meadows and *old fields* is not only found in every part of the United States, but appears to be a resident in all the intermediate region, from the frigid latitude of 53°, and the territory of Oregon, to the mild table land of Mexico, and the

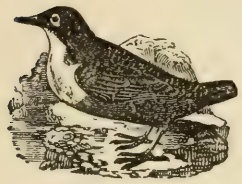


DESERT LARK.

tropical savannahs of Guiana. In the winter they abound in Alabama and west Florida, so that in some degree, like the Jays, and the legitimate Starlings, they partially migrate in quest of food during the severity of the weather in the colder states. It is not however improbable, but that most of the migrating families of this bird, which we find at this season, have merely travelled eastward from the cold western plains that are annually covered with snow. They are now seen in considerable numbers in and round the salt marshes, roving about in flocks of ten to thirty or more, seeking the shelter of the sea-coast, though not in such dense flocks as the true Starlings; these in the manner of our common Blackbirds assemble in winter, like dark clouds, moving as one body, and when about to descend, perform progressive circular evolutions in the air, like a phalanx in the order of battle; and when settled, blacken the earth with their numbers, as well as stun the ears with their chatter. Like crows also, they seek the shelter of reed marshes to pass the night, and in the day take the benefit of every sunny and sheltered covert.

THE WATER OUZEL.

The Water Ouzel is, in size, somewhat less than the Blackbird. Its bill is black, and almost straight. The eyelids are white. The upper parts of the head and neck are of a deep brown; and the rest of the upper parts, the belly, the vent, and the tail, are black. The chin, the forepart of the neck, and breast, are white or yellowish. The legs are black.



WATER OUZEL.

This bird frequents the banks of springs and brooks; and prefers those of limpid streams whose fall is rapid, and whose bed is broken with stones and fragments of rocks.

Its habits are singular. Aquatic birds, with palmated feet, swim or dive; those which inhabit the shores, wade by means of their tall legs, without wetting their body; but the Water Ouzel walks quite into the flood, following the declivity of the ground. It is observed to enter by degrees, till the water reaches its neck; and it still advances holding its head not higher than usual, though completely immersed. It continues to walk under the water: and even descends to the bottom, where it saunters as on a dry bank. The following is an account of this extraordinary habit, which was communicated by M. Herbert to M. de Buffon:

"I lay concealed on the verge of the lake Nantua, in a hut formed of pine-branches and snow; where I was waiting till a boat, which was rowing on the lake, should drive some wild ducks to the water's edge. Before me was a small inlet, the bottom of which gently shelved, till the water was two or three feet deep in the middle. A Water Ouzel stopped here more than an hour, and I had full leisure to view its manœuvres. It entered the water, disappeared, and again emerged on the other side of the inlet, which it thus repeatedly forded. It traversed the whole of the bottom, and in so doing seemed not to have changed its element, and discovered no hesitation or reluctance in the immersion. However, I perceived several times, that as often as it waded deeper than the knee, it displayed its wings, and allowed them to hang to the ground. I remarked too, that, when I could discern it at the bottom of the water, it appeared enveloped with air, which gave it a brilliant surface; like that on some sorts of beetles, which in water are always enclosed in a bubble of air. Its view in dropping its wings on entering the water, might be to confine this air; it was certainly never without some, and it seemed to quiver. These singular habits were unknown to all the sportsmen with whom I talked on the subject; and perhaps, had it not been for the accident of the snow-hut in which I was concealed, I should also have for ever remained ignorant of them; but the above facts I can aver, as the bird came quite to my feet, and that I might observe it, I refrained from killing it."

The Water Ouzel is found in many parts of Europe. The female makes her nest on the ground, in some mossy bank near the water, of hay and dried fibres, lining it with dry oak-leaves, and forming to it a portico or entrance of moss. The eggs are five in number; white, tinged with a fine blush of red. A pair of these birds, which had for many years built under a small wooden bridge in Caermarthenshire, were found to have a nest early in May: this was taken, but it contained no eggs, although the bird flew out of it at the time. About a fortnight afterwards they had completed another nest in the same place, enclosing five eggs; this was taken; and, in a month, a third nest, under the same bridge, was taken, that had in it four eggs; undoubtedly the work of the same birds, as no others were seen about that part. At the time that the last nest was taken, the female was sitting; and the instant she quitted the nest, she plunged into the water, and disappeared for a considerable while, till at last she emerged at a great distance down the stream. At another time, a nest of the Water Ouzel was found in a steep projecting bank (over a rivulet) clothed with moss. The nest was so well adapted in color to the surrounding materials, that nothing but one of the old birds flying in with a fish in its bill could have led to the discovery. The young-ones were nearly feathered, but incapable of flight; and the moment the nest was disturbed they fluttered out and dropped into the water, and, to the astonishment of the persons present, instantly vanished; but in a little time they re-appeared at some distance down the stream, and it was with difficulty that two out of the five were taken.

The Water Ouzel will sometimes pick up insects at the edge of the water. When disturbed, it usually flirts up its tail, and makes a chirping noise. Its song in spring is said to be very pretty. In some places this bird is supposed to be migratory. The ear is startled by the sonorous song of this singular bird as it mingles with the hoarse tones of the torrent, or the rushing of the wintry waterfall, sometimes when there is a storm of snow. Mr. Rennie remarks: "It is one of the few birds that are vocal so early in the year as the months of January and February; I have heard it when the thermometer was 26° sing incessantly, not only elegantly but powerfully with much variety in the notes.

THE RING OUZEL.

This bird is found in various parts of Europe, and is somewhat larger than the common Blackbird. They haunt the wildest and most rocky parts of glens and ravines, and make their nest on some steep bank, under the covert of grass or heath, or on some shelf amidst mosses, which, the outside being made of the same materials, entirely conceal it from view. The upper parts of the body of the male bird is black, the feathers being margined with blackish-grey. On the upper part of the breast is a large crescent-shaped gorget of pure white. The plumage of the female bird is more clouded with grey, and the pectoral gorget is much smaller, and clouded with red dish-brown and grey.



WATER OUZELS.

THE WHEATEAR.

The Wheatear is one of our early visitors, appearing at the beginning of March. It is a very conspicuous bird, and can be readily distinguished by the black mark that surrounds the eye, and stretches from the base of the bill, to beyond the ear-coverts. It is a very pretty songster, its notes being soft and sweet, although wanting in power.

It is killed in great numbers for the table, as its flesh is so delicate as to entitle it to the name of the English Ortolan. In the proper season, the bird is covered with fat to such an extent, that the plumage is often spoiled by the fat running from the holes made by the shot.

The nest of the Wheatear is made of the usual materials, and is placed in some sheltered spot where it is well concealed from prying eyes. The eggs are five or six in number, of a delicate feint bluish tinge, and very smooth on the exterior.

THE REDSTART.

The Redstart derives its name from the bright reddish chestnut color of the upper tail coverts and tail feathers, which appear very conspicuous as the bird flits from one tree to another, or dashes off when startled. It inhabits the skirts of forests, copses, gardens, and especially frequents old ivied walls, where numbers of the nests may be found. In 1847, I found a Redstart's nest built in a hole of a wall, forming one side of a narrow passage in Merton College, Oxford. The eggs were nearly hatched, and the birds did not seem to be disturbed by the constant passing of servants with their paraphernalia of brooms, pails, and other implements. The nest was so placed that every passer by could not fail to perceive it, but the birds sat on their eggs quite unconcernedly.



REDSTART.

The song of this bird is not very powerful, but the notes are peculiarly sweet. While singing, it often changes its situation, occasionally singing as it flies.

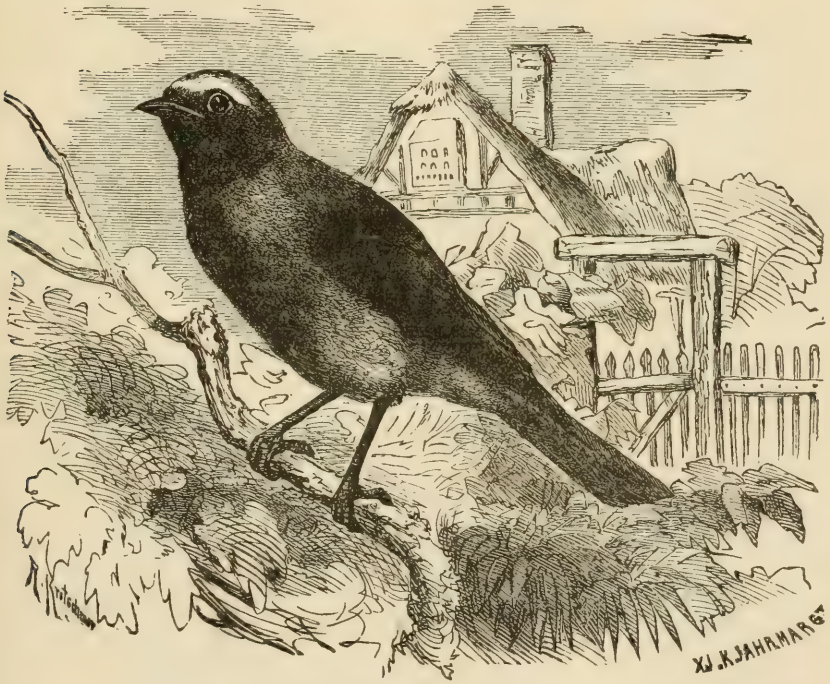
The nest is placed usually in a hole in a wall, or in a hollow tree. The eggs are five in number, of a greenish-blue color, closely resembling those of the Hedge Accentor. The length of the bird is rather more than five inches. The fourth primary feather is the longest.

THE GARDEN WARBLER

This bird is one of our sweetest songsters, and is supposed by some to be little inferior to the Nightingale itself. So we may well pardon its occasional depredations on our garden fruit for the sake of its melody.

It is a migratory bird, arriving in England in April, and leaving towards the end of August or the beginning of September. Almost every part of England is visited by this bird, and especially those counties where are thick woods and plenty of water.

The color of this Pettichaps is an olive green, shot, as the ladies say, with a greyish shading; while some parts of the body, such as



GARDEN REDSTART.

the sides of the neck, the throat, and under parts, are either ash grey or greyish white. The length of the bird is about six inches.

Its nest is built in hedges, and situated near the ground. In it are laid four or five eggs, of a whitish grey color, spotted with brown, the spots being collected towards the larger end.

This is the Beccafico of the Italians, so celebrated as a dainty for the table.

OF THE THRUSH TRIBE IN GENERAL.

THE Thrushes have the following generic character: a straightish bill, bending towards the point, and slightly notched near the end of the upper mandible: the nostrils oval and for the most part naked the tongue slightly jagged at the end; the corners of the mouth furnished with a few slender hairs: and the middle toe connected to the outer one as far as the first joint.

THE SONG-THRUSH, OR THROSTLE.

The song of this bird is heard during nearly nine months of the year. Few of the choristers of the woods are heard with greater



SONG THRUSH.

delight than this. It will sometimes sit for hours together on the top of an elevated tree, and make the woods re-echo with its song.

The Thrush resides in England through the whole year, but on the Continent it disappears during the frost, and re-appears for a short visit in the months of March and April.

Their nests are built in woods or orchards, and not unfrequently in thick hedges near the ground. The outside of the nest consists of fine and soft moss, interwoven with dried grass or hay; and the inside is curiously plastered with Cow-dung. The eggs are usually five or six in number, of a deep blue color marked with black spots. Each brood, for a little while, follows separately its parents; but this does not long continue, for, as soon as the individuals are capable of obtaining their own subsistence, they disperse.

We are informed by M. de Buffon, that in a few of the districts of Poland such immense numbers of Thrushes are sometimes caught, that the inhabitants load small vessels with them for exportation. The Redwing is a variety of the Thrush.

THE MISSEL, OR MISSELTOE THRUSH, OR STORMCOCK.

The Missel, or Misseltoe Thrush, or Stormcock, according to Waterton, "surpasses all other Thrushes in size, and is decidedly the largest songster of the European birds. He remains with us the whole of the year, and he is one of three birds which charm us with their melody during the dreary winter, when the Throstle and Lark are silent and all the migratory birds have left us, to sojourn in warmer climates. He appears to be gregarious in the months of August and September."



MISSELTOE-THRUSH.

"This bird, though usually known by the name of the Misseltoe Thrush in many parts of England, is invariably called the Stormcock by all the lower orders in our neighborhood: not that it delights in storms more than in fine weather; but that nature has taught it to pour forth its melody at a time of the year when the bleak winds of winter roar through the leafless trees.

It is very fond of the berries of the misseltoe, but when they fail it turns its attention to those of the mountain-ash, which are almost certain to attract this beautiful and powerful songster. In the summer it devours all kinds of garden-fruits, especially cherries and raspberries.

During the breeding season it is very pugnacious, attacking and driving away not only small birds, but the Crow, the Magpie, or even the prowling Cat. The nest is very large, almost as large as a "wide-awake" hat, is always built in a tree, and contains about five reddish spotted eggs. The length of the bird is eleven inches.



BLACKBIRDS.

THE BLACKBIRD.

The food of the Blackbird consists principally of Worms and shelled Snails; the latter of which, in order to get at the animal, it dashes with great dexterity against the stones. All kinds of insects, as well as fruit, it also eagerly seeks after. In confinement it will eat crumbs of bread; and even flesh, either raw or cooked.

This is a solitary bird: never congregating, and in general preferring woods and retired situations.

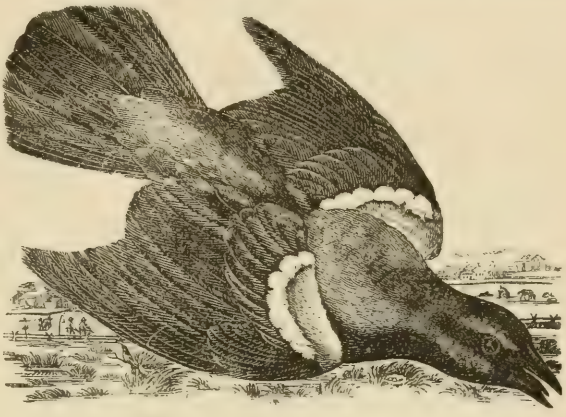
Blackbirds breed early in the spring. They prepare a nest composed externally of green moss, fibrous roots, and other similar materials: the inside is plastered with earth, and afterwards lined with fine dry grass. The nest is usually placed in a thick bush, against the side of a tree, or on a stump in the side of a bank. The female lays four or five light-blue eggs, thickly covered with pale rust-colored spots, particularly at the large end.

When the young ones are taken from the nest, they should for

some time be fed on raw meat, bread, and bruised hempseed: the meat should be chopped small, the bread a little wetted, and then the whole mixed together. It is necessary to keep them clean.

THE RED-WINGED BLACK BIRD, OR TROOPIAL.

The Red-winged Blackbird in summer inhabits the whole of North America from Nova Scotia to Mexico. It is migratory north of Maryland, but passes the winter and summer in all the southern States, frequenting chiefly the settlements and rice and cornfields, towards the sea-coast, where they move about like blackening clouds, rising suddenly at times with a noise like thunder, and exhibiting amidst the broad shadows of their funereal plumage, the bright flashing of the vermilion with which their wings are so singularly decorated. After whirling and waving a little distance, like the Starling, they descend as a torrent, and darkening the branches of the trees by their numbers, they commence a general concert that may be heard for more than two miles.



RED-WINGED BLACKBIRD.

When their food begins to fail in the fields, they assemble with the Purple Grakles, very familiarly around the corn-cribs and in the barn-yards, greedily and dexterously gleaning up every thing within their reach. In the month of March, Mr. Bullock found them very numerous and bold near the city of Mexico.

THE COW TROOPIAL, OR COW BLACK-BIRD.

The Cow-pen Bird, perpetually gregarious and flitting, is observed to enter the Middle and Northern States in the latter end of March or the beginning of April. They make their migration now chiefly under cover of the night, or early dawn; and as the season becomes milder they pass on to Canada, and perhaps follow the Warblers and other small birds into the farthest regions of the north, for they are seen no more after the middle of June, until the return of autumn, when, with the colds of October, they again reappear in numerous and augmented flocks, usually associated with their kindred Red-

wings, to whom they bear a sensible likeness, as well as a similarity in notes and manners. When on the ground, they scratch up the soil and appear very intent after their food. Sometimes even, infringing on the rights of the Plover, individuals in the winter, frequent the margins of ponds in quest of aquatic insects and small Shell-fish; and they may be seen industriously occupied in turning over the leaves of the water-plants to which they adhere. They also frequent occasionally the rice and corn-fields, as well as their more notorious associates, but are more inclined to native food and insects at all times, so that they are more independent and less injurious to the farmer. As they exist in Mexico, and California, it is probable, that they are also bred in the higher table lands, as well as in the regions of the north. In Louisiana, however, according to Audubon, they are rare visitors at any season, seeming more inclined to follow their route through the maritime districts. Over these countries, high in the air, in the month of October, they are seen by day winging their way to the remoter regions of the south.

THE RICE BIRD, OR BOB-O-LINK.

The whole continent of America, from Labrador to Mexico, and the great Antilles, are the occasional residence of this truly migratory species. About the middle of March, or beginning of April, the cheerful Bob-o-link makes his appearance in the southern extremity of the United States, becoming gradually arrayed in his nuptial livery, and accompanied by troops of his companions, who often precede the arrival of their more tardy mates. According to Richardson it is the beginning of June when they arrive at their farthest boreal station in the fifty-forth degree. We observed them in the great western plains to the base of the Rocky Mountains, but not in Oregon. Their wintering resort appears to be rather the West Indies than the tropical continent, as their migrations are observed to take place generally to the east of Louisiana, where their visits are rare and irregular. At this season also they make their approaches chiefly by night, obeying, as it were, more distinctly, the mandates of an overruling instinct, which prompts them to seek out their natal regions; while in autumn, their progress, by day only, is alone instigated by the natural quest of food. About the 1st of May the meadows of Massachusetts begin to re-echo their lively ditty. At this season, in wet places, and by newly ploughed fields they destroy many insects and their larvæ. According to their success in obtaining food, parties often delay their final northern movement as late as the middle of May, so that they appear to be in no haste to arrive at their destination at any exact period. The principal business of their lives, however, the rearing of their young, does not take place until they have left the parallel of the fortieth degree. The nests of these birds are built of grass, and placed sometimes on the summit of a tree, sometimes among the creeping plants that cover its trunk; those in the trees are larger and shaped more regular than the others. In



SHOOTING RICE BIRDS.

the savannahs of Ohio and Michigan, and the cool grassy meadows of New York, Canada, and New England, they fix their abode, and obtain a sufficiency of food throughout the summer, without molesting the harvest of the farmer, until the ripening of the latest crops of oats and barley, when

in their autumnal and changed dress, hardly now known as the same species, they sometimes show their taste for plunder, and flock together like the greedy and predatory Blackbirds.

THE COMMON CROW-BLACKBIRD.

This very common bird is an occasional or constant resident in every part of America, from Hudson's Bay and the northern interior to the great Antilles, within the tropic. In most parts of this wide region they also breed, at least from Nova Scotia to Louisiana, and probably farther south. Into the States north of Virginia they begin to migrate from the beginning of March to May, leaving those countries again in numerous troops about the middle of November. Thus assembled from the north and west in increasing numbers, they wholly overrun, at times, the warmer maritime regions, where they assemble to pass the winter in the company of their well known cousins the Red-winged Troopials or Blackbirds; for both, impelled by the same predatory appetite, and love of comfortable winter quarters, are often thus accidentally associated in the plundering and gleaning of the plantations. The amazing numbers in which the present species associate are almost incredible. Wilson relates that on the 20th of January, a few miles from the banks of the Roanoke in Virginia, he met with one of those prodigious armies of Blackbirds, which, as he approached, rose from the surrounding fields with a noise like thunder, and descending on the stretch of road before him, covered it and the fences completely with black; rising again, after a few evolutions, they descended on the skirt of a leafless wood, so thick as to give the whole forest, for a considerable extent the appearance of being shrouded in mourning, the numbers amounting probably to many hundreds of thousands. Their notes and screams resembled the distant sound of a mighty cataract, but strangely attuned into a



CROW BLACKBIRD.

musical cadence, which rose and fell with the fluctuation of the breeze, like the magic harp of Æolus.

Their depredations on the maize crop or Indian corn commence almost with the planting. The infant blades no sooner appear than they are hailed by the greedy Blackbird as the signal for a feast; and, without hesitation, they descend on the fields, and regale themselves with the sweet and sprouted seed, rejecting and scattering the blades around as an evidence of their mischief and audacity. Again, about the beginning of August, while the grain is in the milky state, their attacks are renewed with the most destructive effect, as they now assemble as it were in clouds, and pillage the fields to such a degree that in some low and sheltered situations, in the vicinity of rivers, where they delight to roam, one fourth of the crop is devoured by these vexatious visitors. The gun, also, notwithstanding the havoc it produces, has little more effect than to chase them from one part of the field to the other. In the Southern States, in winter, they hover round the corn-cribs in swarms, and boldly peck the hard grain from the cob through the air openings of the magazine. In consequence of these reiterated depredations they are detested by the farmer as a pest to his industry; though, on their arrival their food for a long time consists wholly of those insects which are calculated to do the most essential injury to the crops.

THE MOCKING BIRD, OR MIMIC THRUSH.

This bird is about the size of a Blackbird, but, in its general form, is somewhat more slender. Its plumage is gray, paler on the under parts of the body than above.



MOCKING BIRD.

This capricious little mimic is common throughout nearly the whole of North America, as well as in several of the West Indian Islands. It cannot, indeed, vie with the feathered inhabitants of those countries in brilliancy of plumage; but it is contented with much more rare and estimable qualifications. It possesses not only natural notes of its own, which are truly musical and solemn; but it can at pleasure assume the tone of every other animal in the forest, from the Humming-bird to the Eagle, and descending even to the Wolf or the Raven. One of them, confined in a cage, has been heard to mimic the mewing of a Cat, the chattering of a Magpie, and the creaking of the hinges of a sign-post in high winds.

The Mocking Bird seems to have a pleasure in leading other birds astray. He is said at one time to allure the smaller birds with the call of their mates; and when they come near, to terrify them with the scream of an Eagle. There is scarcely a bird of the forest that is not at times deceived by his call.

But he is not like the mimics among mankind, who seldom possess

any independent merit. A Garrick and a Foote have not pleased more in their own characters, than the Mocking Bird does in his. He is the only one of the American singing-birds that can be compared with those of Europe; and, were it not for the attention that he pays to every sort of disagreeable noise, which tends to debase his best notes, there can be little doubt that he would be fully equal to the song of the Nightingale in its whole compass. He frequents the dwellings of the American farmers; where, sitting on the roof or chimney, he sometimes pours forth the most sweet and varied notes imaginable. The Mexicans, on account of his various notes and his imitative powers, call him, "The Bird of Four Hundred Tongues." In the warmer parts of America he sings incessantly from March to August, both day and night: beginning with his own compositions, and frequently finishing by borrowing from those of the whole feathered choir. He repeats his tunes with such artful sweetness as to excite both pleasure and surprise.



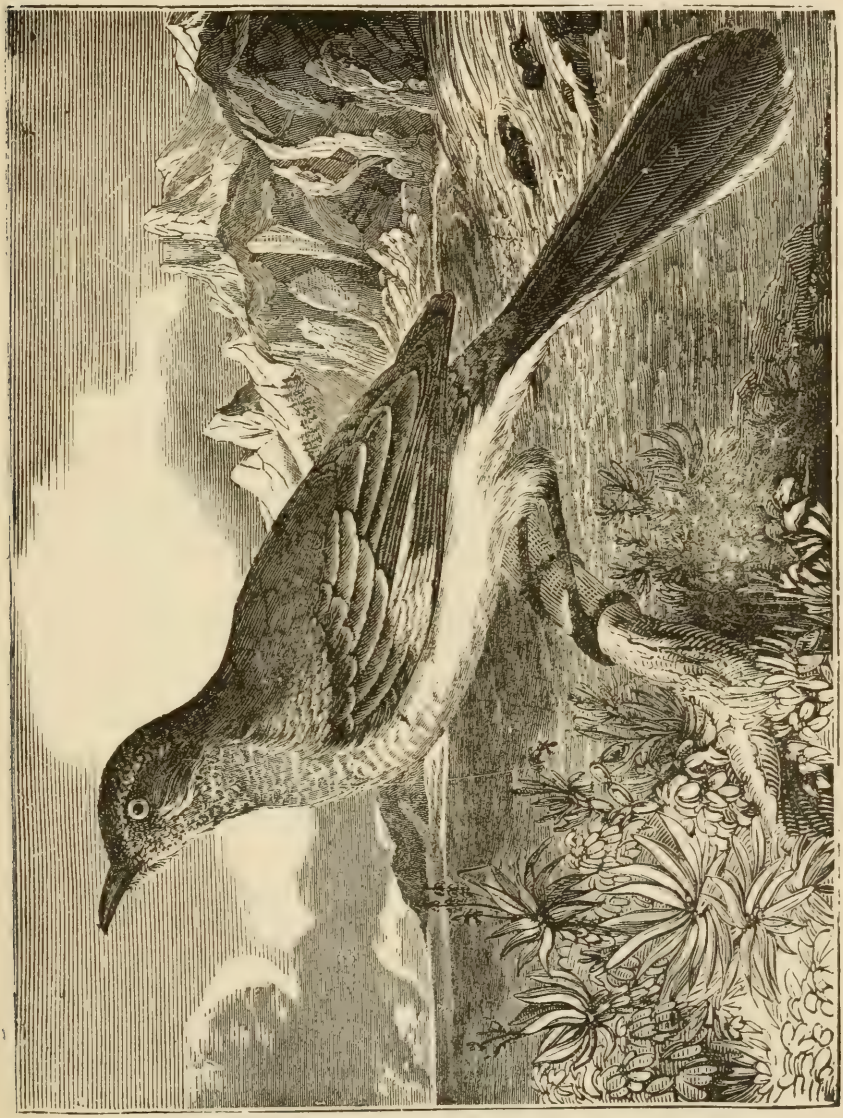
MOCKING BIRD.

It is not, however, in the powers of voice alone that these birds are pleasing; they may even be said to dance. When excited into a kind of ecstacy by their own music, they gradually raise themselves from the place where they stand, and, with their wings extended, drop with their head down to the same spot, and whirl round, accompanying their melody with a variety of interesting gesticulations.

They frequently build their nests in bushes or fruit-trees, in the vicinity of houses; but they are so shy, that if a person only look at the nest, they immediately forsake it. The young-ones may be brought up in a cage, and rendered domestic; but this cannot be done without great difficulty, not one attempt in ten being successful for that purpose. If the young-ones are caught in the nest, the mother will feed them for a few days, but is sure to desert them afterwards. If a cat happen to approach the nest, the parent bird will fly at the head of the animal and, with a hissing noise, scare it away.

The Mocking Bird feeds its young-ones with Grasshoppers; and, when it wants any of these insects, it flies into the pastures, flaps its wings near the ground, and makes a booty of three or four at a time, with which it returns to the nest. It also feeds on different kinds of berries; and is itself eaten, and is very delicate food.

He many times deceives the sportsman, and sends him in search of birds that perhaps are not within miles of him, but whose notes he exactly imitates; even birds themselves are frequently imposed on by this admirable mimic, and are decoyed by the fancied calls of their mates,



THE MOCKING BIRD.

or dive with precipitation into the depth of thickets, at a scream of what they suppose to be the sparrow hawk.

As may readily be imagined, the sounds imitated by these remarkable birds vary according to the situation in which they live; those that occupy woodland districts naturally repeat the note uttered by their

feathered companions, whilst those near a farmyard learn not only to imitate the cries of all the different inhabitants, but reproduce them so perfectly as to deceive the nicest ear. Thus they have been known to summon the house-dog, by whistling like his master; drive a hen to a state of utmost excitement, by constantly screaming out in such a manner as to lead her to suppose that one of her chicks was in the last agonies; or to scare away a whole flock of poultry by the perfection with which they imitate a cry of one of the many tyrants of the air.

THE LOCUST-EATING THRUSH.

The head, breast, and back of the Locust-eating Thrush are of a pale ash-color, and the abdomen and rump are white. The wings and tail are black: the latter short, and a little forked. From the angle of the mouth a naked space of sulphureous yellow extends under the eye, and a little beyond it; and there are two naked black streaks under the throat.



LOCUST-EATING THRUSH.

To this new species, which is found in the interior of the southern districts of Africa, and is only met with in places where the migrating Locusts frequent, Mr. Barrow has affixed the specific name of *Gryllivorus*. This he has done with great propriety, as, when such is to be obtained, its whole food seems to consist of the larvæ of these insects, and, except when the Locust infests any particular district, this bird is seldom to be found there.

Providence, which has not often given a bane without accompanying it with an antidote, seems to have peculiarly ordained this bird as a relief to the inhabitants of Africa, from the dreadful attacks of these most voracious and most numerous of all insects. But, however astonishing the multitudes of Locusts may be, the numbers of the Locust-eating Thrushes are not less so. Their nests, which at a distance seem of enormous size, appear on examination to consist of a number of cells, each of which forms a separate nest, with a tube that leads into it through the side; so that what seemed but one great nest, is found to consist of a little republic, of perhaps ten or twenty. One roof of interwoven twigs covers the whole, like that made over the nest of the Magpie of England.

Mr. Barrow saw a vast number of these birds in the district of Sneuberg, about one hundred and fifty leagues north-east of the Cape. They had not visited that colony for thirteen years before; that is to say, since the last time the Locusts had infested it. They had, however, now taken up a temporary abode, in a place which they were not likely, in a short space of time, to be under the necessity of quitting for want of food. Of the innumerable multitudes of the incomplete insects or larvæ of the Locusts, that at this time infected the southern districts of Africa, no adequate idea could possibly be formed; for, in an area of nearly two thousand square miles, the whole surface of the earth might literally be said to be covered with them.

OF THE GROSBEAKS IN GENERAL.

In the Grosbeaks we observe a strong, thick, and convex beak, rounded from the base to the point of each mandible, and admirably adapted for breaking in pieces the shells of the seeds on which they feed. The nostrils are small and round; and the tongue is formed as if the end were cut off. The toes, except in one species, are placed three forwards.

THE CROSS-BILL.

The male Cross-bills are red, varied with brown or green; and at certain seasons of the year they change to deep red, to orange, or pale yellow. The females are of an olive green color, which they also change occasionally.

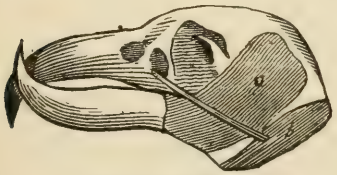


CROSS-BILL.

Doctor Townson, whilst he resided at Gottingen, possessed several Cross-bills. These, by kind treatment, soon becoming tame, he suffered to be at liberty in his study. He had thus constant opportunities of observing them, and as often of admiring their docility and sagacity; but the singular structure of their bills chiefly engaged his attention.

This structure M. de Buffon, perhaps unthinkingly, and certainly unjustly, has considered as one of Nature's freaks, calculated to render the bird much less essential service than a beak in some other form would have done. But, notwithstanding the apparently awkward and useless shape of this member, it has been found to have the best possible adaptation to the destination and habits of the bird.

The two mandibles do not lie straight; but pass, for a considerable part of their length, on the side of each other, like the blades of a pair of scissors. By means of this peculiar construction, the Cross-bills are able to procure their food with the utmost address. They live principally on the seeds that are contained in the cones of the fir or pine; and it is to extract these that this structure is principally adapted. In this operation, they fix themselves across the cone, then bring the points of the beak from their crossed or lateral position to be immediately opposite to each other. In this reduced compass, they insinuate it between the scales, and, distending the two mandibles to their usual position sideways, force the scales open; and then, again bringing the points into contact, pick out the seed, in the same manner as if their bills were formed like those of other birds. While in this



BILL OF CROSS-BILLS.



BANDED CROSSBILLS.

act, they are so intent on the business, as frequently to suffer themselves to be caught by means of a horse-hair noose fixed to a long fishing-rod. They are discovered by the twittering noise they make while feeding.

The degree of lateral force which they are able to exert, is very surprising. This, which they are at times fond of exercising for mere amusement, renders them, in a tame state, not a little mischievous. The Cross-bills which Dr. Townson had at Gottingen would often come to his table while he was writing, and carry off his pencils, little chip boxes in which he occasionally kept insects, and other similar objects, and tear them to pieces almost instantaneously. Their mode of operation was first to peck a little hole; to insert into this their

bill, and then to split or tear the object by the lateral force. When he gave them, as he often did, almonds in their shell, they got at the kernel in the same manner; first pecking a hole, and then enlarging this by wrenching off the pieces by the lateral force.

Notwithstanding the apparent awkwardness of this beak, the Crossbills are able, by bringing the mandibles point to point, even to pick up and eat the smallest seeds. The German bird-catchers usually feed them with poppy and other small seeds; and they shell hempseeds in eating them, as well as any other birds whatever. These birds breed in Austria;, building their hemispherical nests in the branches of high trees. In these they lay a few whitish eggs, spotted towards the thicker end with red. They are somewhat rare in England.

THE GREENFINCH.

The upper parts of the body are of a yellowish green, and some of the lower parts are white. The outer quill-feathers are edged with yellow. The tail is forked, and the four lateral feathers are yellow at the base. The bill is brownish, and the legs flesh-colored.



GREENFINCH.

Greenfinches are very common birds in England. They build their nests in hedges, and lay five or six eggs, of a pale green color, marked with blood-colored spots. During the breeding-time, the bird that is not immediately engaged in incubation or nutrition, may often be seen sporting on the wing, in a pleasing manner, over the bush.

They are so easily tamed, as sometimes to eat out of the hand in five or ten minutes after they are taken, if there be an opportunity of immediately carrying them into the dark. The bird should then be put upon the finger, from which, not knowing how to fly in the dark, it will not attempt to move: the finger of the other hand should afterwards be put under its breast, on which it will climb. This must be repeated eight or ten times; and by stroking and caressing the bird at the intervals, it will find that no injury is intended. The light being then let in by degrees, it will very frequently eat bruised seed out of the hand, and afterwards continue tame.

The Greenfinch inhabits the whole of Europe, and a large portion of Asia, with the exception of the most northerly countries; it is also numerous in Spain, but quite unknown in Siberia. Everywhere it is found about pasture land, and such localities as are at no great distance from human habitations; it avoids all thickly wooded places, and usually lives in pairs or small parties, the latter increasing into large flocks only during their passage from one country to another, at which times they associate freely with many other small birds of kindred habits. The Greenfinch generally selects some small coppice or garden for its residence, and passes the entire day in flitting from place to place, or upon the ground, whither it resorts in search of food. At night it seeks a shelter in the branches of some thick foliaged tree.

THE CARDINAL GROSBEAK.

The Cardinal Grosbeak is about eight inches in length. The bill is stout, and of a pale red color. On the head there is a pointed crest: the plumage is in general of a fine red, but round the bill and throat it is black. The legs are of the same color as the bill.



CARDINAL GROSBEAK.

This is an inhabitant of several parts of North America. The melody of its song is said somewhat to resemble that of the Nightingale. In spring, and during great part of the summer, it sits on the tops of the highest trees, and with its loud and piercing notes makes the forests echo.

The Cardinal Grosbeaks are chiefly remarkable for laying up, during summer, their winter provision of maize and buckwheat. Nearly a bushel of maize has been found in the retreat of one of these birds, artfully covered with leaves and small branches of trees, and only a small hole left for the bird to enter at.

The Americans frequently keep these birds in cages; where they sing, with a very short interval of silence, through the whole year.

THE GRENADIER GROSBEAK.

The Grenadier Grosbeak is of about the size of a sparrow. The body is in general of a beautiful red color. The forehead, sides of the head, chin, breast and belly, are black. The wings are brown, and the legs pale brown

THE SOCIABLE GROSBEAK.

The length of the Sociable Grosbeak is about five inches and a half. Its color is rufus-brown above, and yellowish beneath. The bill and forehead are black, the region of the ears is yellowish, and the legs are brown. The tail is short.



SOCIABLE GROSBEAK.

This species is an inhabitant of the interior country of the Cape of Good Hope.

Few birds live together in such large societies, or have a mode of nidification so uncommon, as these. They construct their nests in a species of mimosa; which grows to an uncommon size, and seems well suited to them, on account of its ample head, and strong wide-spreading branches. The tallness and smoothness of its trunk is also a perfect defence against the serpent and monkey tribes. The mode in which the nests are fabricated is highly curious. In one tree, described by Mr. Patterson, there could not be fewer than from eight hundred to a thousand under one general roof. Mr. P. calls it a roof, because he says it resembles that of a thatched house; and projects over the entrance of the nest below, in a very singular manner. The industry of these birds "seems almost equal (observes this traveller) to that of the bee. Throughout the day they appear to be busily employed in carrying a fine species of grass; which is the principal material they employ for the purpose of erecting this extraordinary work, as well as for additions and repairs. Though my short stay in the country was not sufficient to satisfy me, by ocular proof, that they added to

their nest as they annually increased in numbers; still, from the many trees which I have seen borne down by the weight, and others which I have observed with the boughs completely covered over, it would appear that this is really the case. When the tree, which is the support of this aërial city, is obliged to give way to the increase of weight, it is obvious that the birds are no longer protected, and are under the necessity of rebuilding in other trees. One of these deserted nests I had the curiosity to break down, for the purpose of informing myself of the internal structure of it; and found it equally ingenious with that of the external. There were many entrances; each of which formed a regular street, with nests on both sides about two inches distant from each other. The grass with which the birds build is called the Bushman's grass; and I believe the seed of it to be their principal food; though on examining their nests, I found the wings and legs of different insects. From every appearance, the nest which I dissected had been inhabited for many years; and some parts of it were much more complete than others. This, therefore, I conceive to amount nearly to a proof, that the animals added to it at different times, as they found necessary, from the increase of their family, or rather of the nation or community."

THE BULFINCH.

In a state of nature the Bulfinch has but three cries, all of which are unpleasant: but if instructed methodically, and accustomed to finer, mellower, and more lengthened strains, it will listen with attention; and the docile bird, whether male or female, without relinquishing its native airs, will imitate exactly, and sometimes even surpass, its master. "I know a curious person, (says the author of the *Ædonolgie*,) who having whistled some airs quite plain to a Bulfinch, was agreeably surprised to hear the bird add such graceful turns, that the master could



THE BULFINCH.

scarcely recognise his own music, and acknowledged that the scholar excelled him." It must, however, be confessed that, if the Bulfinch be ill-directed, it acquires harsh strains. A friend of M. de Buffon saw one that had never heard any persons whistle but carters; and it whistled like them, with the same strength and coarseness. The Bulfinch also easily learns to articulate words and sentences; and utters them with so tender an accent, that we might almost suppose it felt their force.

These birds are susceptible of personal attachment, which is often strong and durable. Some have been known, after escaping from confinement and living a whole year in the woods, to recognise the voice of their mistress, and return to her. Others have died of melancholy, on being removed from the first object of their attachment. They will also remember injuries received: a Bulfinch that had been thrown to the ground in its cage by some of the rabble, though it did not appear much affected at the time, fell into convulsions ever afterwards at the sight of any mean-looking person, and expired in one of these fits, eight months after the accident.

Bulfinches are not uncommon in England: they construct their nests in bushes, about the middle of May. These are usually built in orchards, woods, or parks, where the trees are numerous. The nest of the Bulfinch is a fabric apparently constructed with little art; but it so nearly resembles the color of the surrounding foliage, as not easily to be discovered. The female lays four or five eggs, of a bluish color, marked at the larger end with dark brown and faintly reddish spots.

In the summer-time these birds chiefly frequent woods and retired places; but in winter they approach gardens and orchards. Here as soon as the vegetation commences, they make great havoc among the buds of the trees.

THE BUNTING TRIBE.

THESE birds have a conical bill, and the sides of each mandible bending inward. On the roof of the upper mandible is a hard knob, used for the breaking of hard seeds.

THE WHIDAH BIRD.

In its *summer plumage* the neck of the Whidah Bird has, at the back, a broad semi-collar, of orange yellow color. The breast is reddish, the under parts of the body and the thighs are white; and the neck, the back, the wings, and tail, are black. In the tail there are four feathers much longer than the others: of these, two are about thirteen inches in length, and are bent somewhat like those of a cock ·

the other two are shorter, considerably broader, and each terminate in a slender thread.

The *winter plumage* is entirely different from the above. The four long tail-feathers fall off: the head is varied with black and white: the breast is black; and the upper wing-coverts are dirty yellow. The feathers of the tail and wings are dark brown; and those of the under part of the body are white.

In the kingdom of Angola, on the western coast of Africa, and in the country around Mosambique, on the eastern coast of that quarter of the world, these birds are found in great numbers. They are somewhat larger than a Sparrow, and subsist on seeds of various kinds.

It is a remarkable fact, that the Whidah Birds have in winter a plumage entirely different from that by which they are distinguished during the summer; and that even their most characteristic feathers are every year shed, without being renewed for several months. When the birds are brought into northern climates, this change generally takes place about the beginning of November. Their winter plumage continues till the spring; and the tail-feathers are not again completed till the end of June or the beginning of July. The color of the beak and legs, the former blackish and the latter flesh-colored, is permanent.

In the month of May, 1820, Mr. Carlisle favored me with the following account of a bird of this species, which I have often seen in his possession: "The habits and manners of my Whidah Bird have proved both entertaining and instructive. It has been my constant companion for more than five years, and our mutual good understanding has increased every day. As an intelligent creature, it readily distinguishes me from other persons, and never fails to show its preferable attachment, by a little note and by fluttering towards the nearest side of the cage, on my entering and leaving the room. When clad in its black and orange plumage, and ornamented with its long and crested tail-feathers, it sings much like the warble of the House-Swallow, and, during its song, it shakes its head rapidly sideways, looking steadily at me as if to attract my regard. It then, as if in a state of ecstacy, jumps quickly from perch to perch, rattling its tail with a noise somewhat resembling that which is made by the Rattlesnake. When it wants fresh water, sand, or food, it taps quickly with its beak against the cage, until it attracts my notice. Its only food is canary-seed. I have observed that, on first uncovering its cage it begins to stretch out its legs and wings, then it hops down to sip water, afterwards it eats for about half an hour, picks some sand, and then carefully prunes its feathers. In its ordinary plumage this bird nearly resembles the Reed-Sparrow; and so complete is its change, that not one of the former feathers, remain after either of the two moultings. These moultings take place half yearly, and the shedding of its principal tail-feathers, has been, for five autumns, within three days of the same date in each year.

"As the claws of confined birds grow inconveniently long, I have generally found it expedient to clip those of my bird twice a year, and this process was at first attended with anger; but lately the

occasion is remembered, the bird quitely suffers itself to be caught, and lies patiently in my hand until the operation is over. During this operation it sometimes eats sugar out of my mouth; and when so indulged, it forgets its position so far as to sing a few notes."

OF THE FINCH TRIBE IN GENERAL.

THE Finches are easily distinguished from other birds, by their having a bill very conical and sharp pointed, and somewhat slender towards the end. They are a numerous and active race, dispersed widely over the world, and feeding principally on insects and grain.

THE LINNET.

The length of the Linnet is about five and a half inches. The bill is bluish grey. The eyes are hazel: the head and back are of a dark reddish brown, the breast is of a deeper color, and in spring changes to a beautiful crimson; the quills are dusky, edged with white; the tail is brown, and with white edges.



LINNET.

For the sweetness of its song the Linnet is much admired: its notes are considered little inferior to those of the most musical of our birds. The Linnet may also easily be taught to imitate the song of any other bird, if brought up with it from the nest.

Linnets have young-ones about the month of May. They usually form their nest in a thick bush or hedge. This is small: the outside is composed of bents, dried weeds, and straw; and the inside of horse-hairs, and wool or cotton, mixed with downy materials collected from

dried plants. The female lays four or five white eggs, speckled particularly towards the large end, with red.

The season in which the bird-catchers usually take these birds, is during the months of June, July or August, or about Michaelmas. They employ for this purpose limed twigs or clap-nets. If, when caught, they be put into store-cages, and fed on any favorite seed for two or three days, they will soon become tame. After this they may be put into separate cages, and fed with rape or canary-seed. If it be intended that the Linnet should imitate the notes of any other bird, it ought to be taken from the nest when about ten days old.

THE COMMON SPARROW.

No bird is better known in every part of Great Britain than the Sparrow. It is a very familiar bird, but so crafty as not to be easily taken in snares. In a wild state its note is only a chirp: this arises, however, not from want of powers, but from its attending solely to the note of the parent birds. A Sparrow, when fledged, was taken from the nest, and educated under a Linnet; it also heard, by accident, a Goldfinch; and its song was, in consequence, a mixture of the two.



THE COMMON SPARROW.

Few birds are more execrated by the farmers, and perhaps more unjustly so, than Sparrows. It is true, they do some injury in devouring corn; but they are probably more useful than noxious. Mr. Bradley, in his General Treatise on Husbandry and Gardening, shows, that a pair of Sparrows, during the time they have their young-ones to feed, destroy on an average, every week, about three thousand three hundred and sixty Caterpillars. This calculation he founded upon actual observation. He discovered that the two parents carried to the nest forty Caterpillars in an hour. He supposed the Sparrows to enter the nest only during twelve hours each day, which would cause a daily consumption of four hundred and eighty Caterpillars; and this average gives three thousand three hundred and sixty Caterpillars extirpated weekly from a garden. But the utility of these birds is not limited to this circumstance alone; for they likewise feed their young-ones with Butterflies and other winged insects, each of which, if not destroyed, would be the parent of hundreds of Caterpillars.

Sparrows build early in the spring; and generally form their nests under the eaves of houses, or in holes in the walls. But when such convenient situations are not to be had, they build in trees a nest bigger than a man's head, with an opening at the side. It is formed

of straw and hay, and lined with feathers, and so nicely managed as to be a defence against both wind and rain. Sparrows sometimes form their nest in the bottoms of Rooks' nests; and this seems a favorite situation with them.

Mr. Smellie relates a pleasing anecdote of the affection of these birds towards their offspring:—"When I was a boy, (says this gentleman,) I carried off a nest of young Sparrows, about a mile from my place of residence. After the nest was completely moved, and while I was marching home with them in triumph, I perceived, with some degree of astonishment, both the parents following me at some distance, and observing my motions in perfect silence. A thought then struck me, that they might follow me home, and feed the young according to their usual manner. When just entering the door I held up the nest, and made the young-ones utter the cry which is expressive of the desire of food. I immediately put the nest and the young in the corner of a wire cage, and placed it on the outside of a window. I chose a situation in the room where I could perceive all that should happen, without being myself seen. The young birds soon cried for food. In a short time both parents, having their bills filled with small Caterpillars, came to the cage; and after chatting a little, as we would do with a friend through the lattice of a prison, gave a small worm to each. This parental intercourse continued regularly for some time; till the young-ones were completely fledged, and had acquired a considerable degree of strength. I then took one of the strongest of them, and placed him on the outside of the cage, in order to observe the conduct of the parents after one of their offspring was emancipated. In a few minutes both parents arrived, loaded, as usual, with food. They no sooner perceived that one of their children had escaped from prison, than they fluttered about, and made a thousand noisy demonstrations of joy, both with their wings and their voices. These tumultuous expressions of unexpected happiness at last gave place to a more calm and soothing conversation. By their voices and their movements it was evident that they earnestly entreated him to follow them, and to fly from his present dangerous state. He seemed to be impatient to obey their mandates; but by his gestures, and the feeble sounds he uttered, he plainly expressed that he was afraid to try an exertion he had never before attempted. They, however, incessantly repeated their solicitations: by flying alternately from the cage to a neighboring chimney-top, they endeavored to show him how easily the journey was to be accomplished. He at last committed himself to the air, and alighted in safety. On his arrival, another scene of clamorous and active joy was exhibited. Next day I repeated the same experiment, by exposing another of the young-ones on the top of the cage. I observed the same conduct with the remainder of the brood, which consisted of four. I need hardly add, that not one either of the parents or children ever afterwards re-visited the execrated cage."

The sparrow will attach itself to man, but never sufficiently so to overlook the precaution necessary for its safety; it is ever upon its guard, and the least excitement will alarm and cause its instant flight.

THE SONG-SPARROW.

This familiar and almost domestic bird is one of the most common and numerous Sparrows in the United States; it is, also, with the Blue-bird, which it seems to accompany, one of the two earliest, sweetest, and most enduring warblers. Though many pass on to the Southern, States at the commencement of winter, yet a few seem to brave the colds of New England, as long as the snowy waste does not conceal their last resource of nutriment. When the inundating storm at length arrives, they no longer, in the sheltering swamps, and borders of bushy streams, spend their time in gleaning an insufficient subsistence, but in the month of November, begin to retire to the warmer States; and here, on fine days, even in January, whisper forth their usual strains. As early as the 4th of March, the weather being mild, the Song-Sparrow and the Blue-Bird here jointly arrive, and cheer the yet dreary face of nature with their familiar songs. The latter flits restlessly through the orchard or neighboring fields; the Sparrow, more social, frequents the garden, barn-yard, or road-side in quest of support, and from the top of some humble bush, stake, or taller bough, tunes forth his cheering lay, in frequent repetitions, for half an hour or more at a time. These notes have some resemblance to parts of the Canary's song, and are almost uninterruptedly and daily delivered, from his coming to the commencement of winter.



SPARROW FEEDING HIS YOUNG.

THE GOLDFINCH.

Goldfinches are very beautiful and well-known birds, much esteemed for their docility, and the sweetness of their song. They are fond of orchards, and frequently build their elegant mossy nest in an apple or pear-tree. They commence this operation about the month of April, when the fruit-trees are in blossom. As they excel nearly all our small birds in beauty of plumage, so also they do in the art which they employ in the formation of this structure. The nest is small · its

outside consists of fine moss, curiously interwoven with other materials; and the inside is lined with grass, horse-hair, wool, feathers, and down. The eggs are five in number, of a white color, speckled and marked with reddish brown.

These birds may be caught in great numbers, at almost any season of the year, either with limed twigs, or the clap-net; but the best time is said to be about Michaelmas. They are easily tamed; and are remarkable for their extreme docility, and the attention they pay to instructions. It requires very little trouble to teach them to perform several movements with accuracy; to fire a cracker, and to draw up small cups containing their food and drink.

Some years ago, the Sieur Roman exhibited in this country the wonderful performances of his birds. These were Goldfinches, Linnets, and Canary-birds. One appeared dead, and was held up by the tail or claw without exhibiting any signs of life. A second stood on its head, with its claws in the air. A third imitated a Dutch milkmaid going to market, with pails on its shoulders. A fourth mimicked a Venetian girl looking out at a window. A fifth appeared as a soldier, and mounted guard as a sentinel. The sixth was a cannoneer, with a cap on its head, a firelock on its shoulder, and a match in its claw; and discharged a small cannon. The same bird also acted as if it had been wounded: it was wheeled in a little barrow, to convey it (as it were) to the hospital; after which it flew away before the company. The seventh turned a kind of windmill. And the last bird stood in the midst of some fire-works which were discharged all round it; and this without exhibiting the least sight of fear.

In solitude the Goldfinch delights to view its image in a mirror; fancying, probably, that it sees another of its own species: and this attachment to society seems to equal the cravings of nature; for it is often observed to pick up the hemp-seed, grain by grain, and advance to eat it at the mirror imagining, no doubt, that it is thus feeding in company.

If a young Goldfinch be educated under a Canary-bird, a Wood-lark, or any other singing bird, it will readily catch its song. Mr. Albin mentions a lady who had a Goldfinch which was even able distinctly to speak several words.

Towards winter these birds usually assemble in flocks. They feed on various kinds of seeds, but are more partial to those of the thistle than any others. They sometimes have been known to attain a great age. Willoughby speaks of one that was twenty-three years old; and Albin says, that they not unfrequently arrive at the age of twenty years.

THE CANARY-FINCH.

If, observes M. de Buffon, the Nightingale is the songster of the woods, the Canary-bird must be considered as the musician of the chamber. It is a social and familiar bird, capable of recollecting kindnesses, and even of some degree of attachment towards those by

whom it is fed and attended. In a state of nature we know but little of its manners and economy. Like the rest of its tribe, it feeds chiefly on seed and different kinds of grain. It inhabits the woods of Italy, Greece, and the Canary Islands; from the latter of which it appears to have been first brought into Europe, about the middle of the fourteenth century. These birds, however, are now so commonly bred in our own country that we are not often under the necessity of crossing the ocean for them.



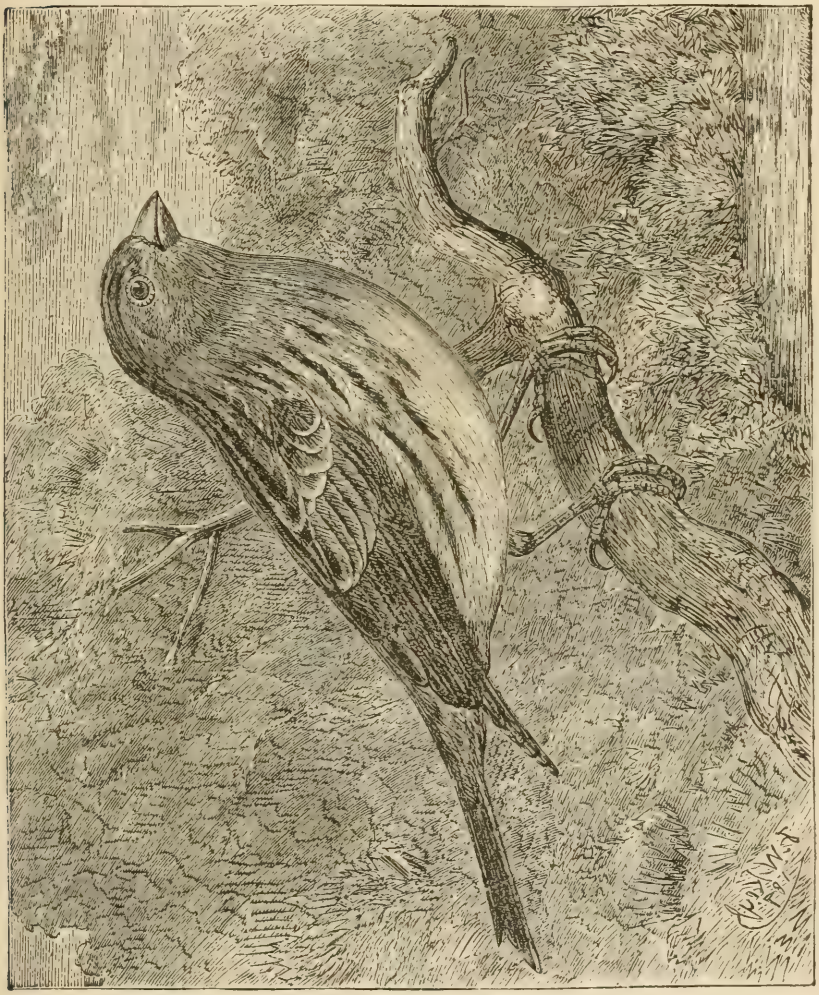
CANARY-FINCH.

It is not generally known, that the song of the Canary-bird is usually composed either of the Titlark's or the Nightingale's notes. Mr. Barrington saw two of these birds which came from the Canary Islands, neither of which had any song at all; and he was informed that a ship afterwards brought over a great number of them, all of which had the same defect. Most of the birds that are imported from Tyrol have been educated under parents, the progenitors of which were instructed by a Nightingale. The English Canary-birds have, however, more of the Titlark's than of the Nightingale's notes.

Dr Darwin relates a very singular anecdote respecting one of these birds: "On observing (says he) a Canary-bird at the house of Mr. Hervey, near Tetbury, in Derbyshire, I was told that it always fainted away when its cage was cleaned; and I desired to see the experiment. The cage being taken from the ceiling, and the bottom drawn out, the bird began to tremble, and turned quite white about the root of its bill: it then opened its mouth as if for breath, and respired quick, stood up straighter on its perch hung, its wings, spread its tail, closed its eyes, and appeared quite stiff and cataleptic for nearly half an hour; and at length, with much trembling and deep respirations, came gradually to itself."

A Frenchman, whose name was Dujon, exhibited in London twenty-four Canary-birds, many of which he said were from eighteen to twenty-five years of age. Some of these balanced themselves, head downward, on their shoulders, having their legs and tail in the air. One of them taking a stick in its claws, passed its head between its legs, and suffered itself to be turned round, as if in the act of being roasted. Another balanced itself, and was swung backward and forward on a slack rope.

A third was dressed in a military uniform, having a cap on its head, wearing a sword and pouch, and carrying a firelock in one claw: after some time sitting upright, this bird, at the word of command, freed itself from its dress, and flew away to the cage. A fourth suffered itself to be



WILD CANARY.

shot at, and, falling down as if dead, was put into a little wheelbarrow, and wheeled away by one of its comrades; and several of the birds were at the same time placed upon a little fire-work, and continued there quietly, and without alarm, till it was discharged.

It is very important to distribute regularly to singing birds the simple allowance of fresh food which is intended for the day. By this means they will sing every day equally.

THE KING-BIRD, OR TYRANT FLY-CATCHER.

This well known, remarkable and pugnacious bird takes up its summer residence in all the intermediate region, from the temperate parts of Mexico to the uninhabited and remote interior of Canada. In all this vast geographical range the King-bird seeks his food and rears his young. According to Audubon, they appear in Louisiana by the middle of March, and about the 20th of April, Wilson remarked their arrival in Pennsylvania in small parties of five or six; but they are very seldom seen in Massachusetts before the middle of May. They are now silent and peaceable, until they begin to pair, and form their nests, which takes place from the first to the last week in May, or early in June, according to the advancement of the season in the latitudes of forty and forty-three degrees. The nest is usually built in the orchard, on the horizontal branch of an apple or pear tree, sometimes in an oak, in the adjoining forest, at various heights from the ground, seldom carefully concealed, and firmly fixed at the bottom to the supporting twigs of the branch. The outside consists of course stalks of dead grass and wiry weeds, the whole well connected and bedded with cut-weed, down, tow, or an occasional rope-yarn, and wool; it is then lined with dry, slender grass, root fibres, and horsehair. The eggs are generally three to five, yellowish-white, and marked with a few large, well defined spots of deep and bright brown. They often build and hatch twice in the season.



TYRANT FLY-CATCHER, OR KING-BIRD.

Like the swallow, they drink and bathe whilst on the wing, invariably perching upon a neighbouring tree, the better to dry their plumage.

The Tyrant Shrikes quit the United States before any other of the feathered summer visitors, and prosecute their migrations by night as

well as day, flying alternately with rapidly repeated strokes of the pinions, and a smooth, gliding motion, that is apparently produced without the slightest effort. The flesh of this species is delicate and much esteemed in Louisiana. Nuttall owned one who swallowed berries whole; grasshoppers were pounded and broken on the cage floor.

OF THE FLY-CATCHERS IN GENERAL.

THE characters of this genus are, a bill flatted at the base, almost triangular, notched at the end of the upper mandible, and beset with bristles. The toes in most of the species are divided as far as the origin.

THE SPOTTED FLY-CATCHER.

The length of this species is about four inches and three quarters: the bill is dusky and beset with short bristles: the head and back are light brown, obscurely spotted with black: the wings and tail are dusky, and the former edged with white: the breast and belly are white: the throat, sides, and feathers under the wings, are tinged with red; and the legs are black.

This is one of the most mute, and most familiar of all the English summer birds. It visits them in spring, rears its young-ones, and leaves the country in September.

Mr. White says, that a pair of these birds built every year in the vines that grew on the walls of his house at Selborne. They one year inadvertently placed their nest on a naked bough, perhaps in a shady time, not being aware of the inconvenience that followed; but a hot, sunny season coming on before the brood was half fledged, the reflection of the wall became insupportable, and must inevitably have destroyed the tender young-ones, had not affection suggested an expedient, and prompted the parent birds to hover over the nest during all the hotter hours; while with wings expanded, and mouths gaping for breath, they screened off the heat from their suffering offspring.

The female lays four or five eggs: the nest is carelessly made, and consists chiefly of moss, mixed with wool and fibres, so strong, and so large, (says M. de Buffon,) that it appears surprising how so small an artificer could make use of such stubborn materials. When its offspring are able to fly, it retires with them among the higher branches of the trees, sinking and rising perpendicularly among the flies which hum below.

This bird feeds on insects, which it catches whilst on wing. It sometimes watches for its prey sitting on a branch or post, and, with a sudden spring, takes it as it flies, and then immediately returns to its station to wait for more. It is said, likewise, to be fond of some kinds of fruit. It is generally believed to have no song. The Rev. Revett Sheppard, however, informs me, that in the garden belonging to the master of Caius College, Cambridge, a Spotted Fly-catcher used frequently to sit on a rail, and entertain him with its notes, which, he says, were very pleasing, and between those of a Wagtail and Wren.

THE PEWIT FLY-CATCHER

This familiar species inhabits the continent of North America, from Canada and Labrador to Texas, retiring from the Northern and Middle States at the approach of winter. How far they proceed to the south at this season is not satisfactorily ascertained; a few, no doubt, winter in the milder parts of the Union, as Wilson saw them in February in the swamps of North and South Carolina, where they were feeding on smilax berries, and occasionally even giving their well-known notes; but in the winter, and early spring of 1830, while employed in an extensive pedestrian journey from South Carolina to Florida and Alabama, I never heard or met with an individual of the species. Audubon found them abundant in the Floridas in winter.



THE PEWIT FLY-CATCHER.

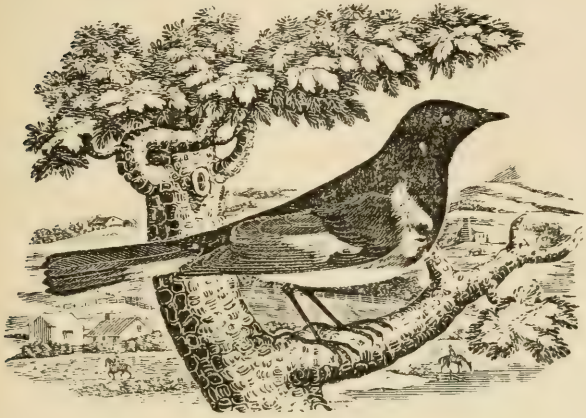
This faithful messenger of spring returns to Pennsylvania as early as the first week in March, remains till October, and sometimes nearly to the middle of November. In Massachusetts, they arrive about the beginning of April, and at first chiefly frequent the woods.

Their favorite resort is near streams, ponds, or stagnant waters, about bridges, caves, and barns, where they choose to breed; and, in short, wherever there is a good prospect for obtaining their insect food.

THE AMERICAN REDSTART.

This beautiful and curious bird takes up its summer residence in almost every part of the North American continent, being found in Canada, in the remote interior near Red river in the latitude of forty-nine degrees, throughout Louisiana, Arkansas, and the maritime parts of Mexico; in all of which vast countries it familiarly breeds and resides during the mild season, withdrawing early in September to trop-

ical America, where, in the perpetual spring and summer of the larger West India islands, the species again find means of support. At length, instigated by more powerful feelings than those of ordinary want the male, now clad in his beautiful nuptial livery, and accompanied by his mate, seeks anew the friendly but far distant natal regions of his



AMERICAN REDSTART.

race. In no haste, the playful Redstart does not appear in Pennsylvania until late in April. The month of May, about the close of the first week, ushers his arrival into the states of New England; but in Louisiana he is seen as early as the beginning of March. He is no pensioner upon the bounty of man. Though sometimes seen, on his first arrival, in the darkest part of the orchard or garden, or by the meandering brook, he seeks to elude observation, and now, the great object of his migrations having arrived, he retires with his mate to the thickest of the sylvan shade. Like his relative Sylvias, he is full of life and in perpetual motion. He does not, like the loitering Pewee, wait the accidental approach of his insect prey, but carrying the war amongst them, he is seen flitting from bough to bough, or at times pursuing the flying troop of winged insects from the top of the tallest tree in a zig-zag, hawk-like, descending flight, to the ground, while the clincking of the bill declares distinctly both his object and success Then alighting on some adjoining branch, intently watching, with his head extended, he runs along upon it for an instant or two, flirting like a fan his expanded brilliant tail from side to side, and again suddenly shoots



NEST OF THE AMERICAN REDSTART.

off like an arrow in a new direction, after the fresh game he has discovered in the distance, and for which he appeared to be reconnoitring. At first the males are seen engaged in active strife, pursuing each other in wide circles through the forest. The female seeks out her prey with less action and flirting, and in her manners resembles the ordinary Sylvias.

The nest of the Redstart is very neat and substantial; fixed occasionally near the forks of a slender hickory or beach sapling, but more generally fastened or agglutinated to the depending branches or twigs of the former; sometimes securely seated amidst the stout footstalks of the waving foliage in the more usual manner of the delicate cradle of the Indian Tailor-bird, but in the deep and cool shade of the forest, instead of the blooming bower.

THE RED-EYED VIREO, OR GREENLET.

This common and indefatigable songster appears to inhabit every part of the American continent from Labrador to the large tropical islands of Jamaica and St. Domingo; they are likewise resident in the mild table land of Mexico. Those who pass the summer with us, however, migrate to the warmer regions at the commencement of winter, as none are found at that season within the limits of the United States. The Red-eyed Vireo arrives in Pennsylvania late in April, and in New England about the beginning of May. It inhabits the shady forests or tall trees near gardens and the suburbs of villages, where its loud, lively, and energetic song is often continued, with little intermission, for several hours at a time, as it darts and pries among the thick foliage in quest of insects and smal. Caterpillars. From its first arrival, until August, it is the most distinguished warbler of the forest, and when almost all the other birds have become mute, its notes are yet heard with unabated vigor.

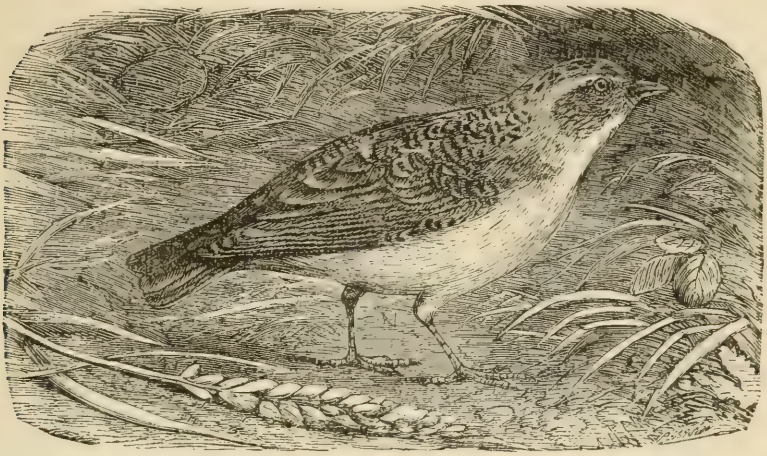


RED-EYED VIREO.

OF THE LARKS IN GENERAL.

In this tribe the bill is straight, slender, bending a little towards the end, and sharp-pointed. The nostrils are covered with feathers and bristles; and the tongue is cloven at the end. The toes are divided to the origin; and the claw of the back toe is very long, and either straight or very little bent.

All the various members of this family are stoutly built, with large heads, beaks of short or moderate length, long and very broad wings, short tails, and rather flat feet; the tail, which is by no means large, is composed of twelve feathers, evenly cut off at their extremity. The plumage is of a brownish shade, nearly alike in the two sexes, but varying considerably as the birds increase in age. The internal structure of the body differs in no essential particular from that of other Passeres. The singing apparatus is well developed, and the lungs are large.



SHORT TOED LARK.

THE SKY-LARK.

The Sky-lark forms its nest on the ground, generally between two clods of earth, and lines it with dried grass and roots. The female lays four or five eggs, which are hatched in about a fortnight; and she generally produces two broods in the year. When hatched, the mother watches over them with a truly maternal affection; she may then be seen fluttering over their heads, directing their motions, anticipating their wants, and guarding them from danger.

The instinctive warmth of attachment which the female Sky-lark bears towards her own species, often discovers itself at a very early period, and even before she is capable of becoming a mother; which might be supposed to precede, in the order of nature, the maternal solicitude. "In the month of May (says M. de Buffon) a young hen-bird was brought to me, which was not able to feed without assistance. I caused her to be educated; and she was hardly fledged, when I received from another place a nest of three or four unfledged Sky-larks. She took a strong liking to these new comers, which were scarcely younger than herself; she tended them night and day, cherished them beneath her wings, and fed them with her bill. Nothing could interrupt her tender offices. If the young-ones were torn from her she flew to them as soon as she was liberated, and would

not think of effecting her own escape, which she might have done a hundred times. Her affection grew upon her: she neglected food and drink; she now required the same support as her adopted offspring, and expired at last, consumed with maternal anxiety. None of the young-ones survived her. They died one after another; so essential were her cares, which were equally tender and judicious."

The common food of young Sky-larks is worms and insects; but after they are grown up they live chiefly on seeds, herbage, and most other vegetable substances. These birds are easily tamed, and they become so familiar as to eat off the table, and even to alight on the hand; but they cannot cling by their toes, on account of the form of the hinder toe, which is straight and very long. This is the reason why they never perch on trees.

The Lark commences his song early in spring, and continues it during the whole of the summer. It is heard chiefly in the morning and evening, and the Lark is one of those few birds that chaunt their mellow notes on the wing. Thomson elegantly describes it as the leader of the warbling choir:—

> Up springs the Lark,
> Shrill-voiced and loud, the messenger of morn
> Ere yet the shadows fly, he, mounted, sings
> Amid the dawning clouds, and from their haunts
> Calls up the tuneful nations.

The Lark mounts almost perpendicularly, and by successive springs, into the air; where it hovers at a vast height. Its descent is in an oblique direction; unless threatened by some ravenous bird of prey, or attracted by its mate, when it drops to the ground like a stone. On its first leaving the earth, its notes are feeble and interrupted; but as it rises, these gradually swell to their full tone. There is something in the concomitant scenery, that renders the music of the Lark peculiarly delightful. The placid landscape and various rural charms, all contribute to heighten our relish for its pleasing song.

These birds become musical in the spring, and continue so for several months; but in winter their song forsakes them. They then assemble in flocks, grow fat, and are caught in vast numbers by the bird-catchers. As many as four thousand dozen have been taken in the neighborhood of Dunstable, between September and February; but this holds no proportion to what are sometimes caught in different parts of Germany, where there is a tax upon them. Keysler says, that at one time this tax produced six thousand dollars every year to the city of Leipsic.

Larks that are caught in the day-time are taken in clap-nets, of fifteen yards in length, and two and a half in breadth; and they are enticed by bits of looking-glass fixed in a piece of wood, and placed in the middle of the nets. These are put into quick whirling motion, by a string which the larker commands; he also makes use of a decoy-bird. This kind of net is used only till the fourteenth of November; for the Larks will not frolic in the air, and consequently cannot be

inveigled in this manner, except in fine sunny weather. When the weather becomes gloomy, the larker changes his engine; and makes use of a trammel-net, twenty-seven or twenty-eight feet long, and five broad. This is put on two poles, eighteen feet long, and carried by men, who pass over the fields, and quarter the ground as a setting-dog would. When the men hear or feel that a Lark has hit the net, they drop it down, and thus the birds are taken.

THE WOOD-LARK.

The Wood-lark is somewhat smaller than the Sky-lark, and its form is shorter and more thick. The top of the head and back are marked with large black spots, edged with pale reddish brown. The head is surrounded with a whitish coronet of feathers, reaching from eye to eye. The throat is of a yellowish white, spotted with black. The breast is tinged with red; the belly is white; and the coverts of the wings are brown edged with white and dull yellow. The quill-feathers are dusky; the exterior edges of the first white, and of the others yellow; and their tips are blunt and white. The first feather of the wing is shorter than the second: in the Sky-lark they are nearly equal. The tail is black, the outermost feather tipped with white the exterior web, and the inner side of the interior web, are also white, in the second feather the exterior web only is white. The legs are of a dull yellow.

In many respects, both of habit and appearance, these birds differ from the Sky-lark. They perch as well in trees as on the ground but this they do only on the largest branches, where they are able to secure their hold without positively embracing the stems with their toes. The Sky-lark forms its nest amongst grass near the bottom of a hedge, or in lays where the grass is rank and dry. The fabric is of loose texture, and constructed of withered herbs, and fibrous roots, with a few horse-hairs in the inside. It has scarcely any hollow, the bottom being nearly on a level with the sides. The whole nest is seldom much more than half an ounce in weight. The number of eggs is about four; these are of a pale bloom-color, beautifully mottled, and clouded with red and yellow.

The young birds are tender, and not easily to be reared in a cage. When first taken from the nest, they should be fed with raw sheep's heart, or other lean fresh meat, mixed with hard-boiled egg, a little bread, and bruised hemp-seed. These must be chopped together as fine as possible, and moistened with water.

From what circumstance these birds have obtained the appellation of Wood-larks, unless it be from their building in thickets, is difficult to say; since, like the common species, they are for the most part found only on large and cultivated plains.

Their song is stated more to resemble that of the Sky-lark. They sing not only in the day-time, but during the night; not only whilst they are in flight, but also when perched upon the trees. Like the Sky-larks, they assemble in considerable flocks during frosty weather.

Their usual food consists of small Beetles, Caterpillers, and other insects, as well as of the seeds of numerous kinds of wild plants.

THE MEADOW PIPIT.

The Meadow Pipit, more commonly called the Titlark, resembles the true Larks in the long hind claw and peculiar plumage, but is pointed out as distinct, by the different color of the bill. Like the Sky-lark, it sings while in the air, but sometimes also pours forth its musical strains while settled upon the ground. It feeds principally on slugs, worms, and insects, which it chases with much activity, after the manner of the Wagtails, even vibrating its tail like them. Hilly grounds, commons, and meadows are its chief resort in summer, but during September and October flocks of these birds may be seen congregated in turnip fields, and in the winter they seek the protection of the warm hedge-rows.

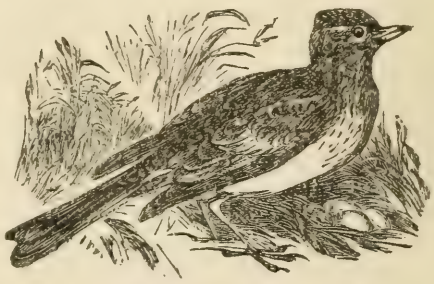


THE MEADOW PIPIT.

The nest of the Titlark is made on the ground, and concealed by a tuft of grass. There are usually five or six eggs, light brown in color, spotted with a darker tint. The length of the bird is six inches

THE GRASSHOPPER-LARK.

This is a very small species. Its bill is slender and dusky. The upper parts of the body are of a variegated greenish brown. The under parts are of a yellowish white, speckled irregularly on the neck and breast. The feathers of the wings and tail are of a palish dusky brown. The tail is long, and somewhat wedge-shaped.



THE GRASSHOPPER LARK.

Nothing, says the Rev. Mr. White, can be more amusing than the sibilous whisper of this little bird, which seems to be close by, though it may be an hundred yards distant; and, when close at your ear, is scarcely any louder than when a great way off. The Grasshopper-lark usually begins his note about the middle of April, and did we not know that the Grasshopper insects are not yet



1. PIPIT LARK, AS HE APPEARS IN THE ACT OF DESCENDING FROM HIS SONG FLIGHT. 2. WOODLARK.
3. THRUSH. 4. BLACKBIRD. 5. SKYLARKS, MALE, FEMALE AND NEST.

hatched, it would not be easy to persuade one's self that the note uttered by this lark was in reality the note of a bird.

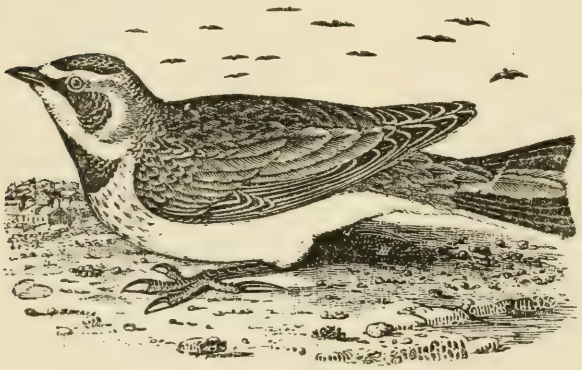
During the season of love, the male has great delight in uttering its song from some bush adjacent to its nest. Its warbling is extremely simple, but at the same time is sweet, and by no means inharmonious These birds also sing during their flight.

They are artful little creatures, generally skulking in the thickest part of the bushes, and sometimes when concealed, singing at the distance of a little more than a yard from any person. Mr. White, speaking of one of them, says, that, in order to find it, he was under the necessity of desiring a person to go on the other side of a hedge that it haunted. The bird even then ran before them, creeping like a Mouse, for more than a hundred yards, through the bottom of the thorns, yet it could not be compelled to come into their sight. Yet this bird, early in the morning, and when undisturbed, would sing on the top of a twig, gaping and shivering its wings with great apparent delight.

The nest of the Grasshopper Lark is formed in some solitary place, and generally concealed under some green turf. The eggs are seldom more than five in number, and these are marked towards the large end with brown. The young-ones are not unfrequently devoured by snakes.

Although these birds are able to perch on small twigs, yet their hinder claw, as in most of the other species, is of considerable length

THE SHORE-LARK.



THE SHORE LARK.

This beautiful species, says Nuttall, is common to the north of the old and new continent, but, as in some other instances already remarked, the Shore-lark extends its migrations much further over America than over Europe and Asia. Our bird was met with in the Arctic regions by the late adventurous voyagers; and Mr. Bullock saw them in the winter around the city of Mexico; so that in their migrations over this continent they spread themselves across the whole habitable Northern hemisphere to the very equator; while in Europe, according to the careful observations of Temminck, they are unknown to the south of Germany. Pallas

met with these birds round Lake Baikal and on the Wolga, in the 53d degree of latitude. Westward they have also been seen in the interior of the United States, along the shores of the Missouri.

They arrive in the Northern and Middle States late in the fall or commencement of winter; in New England they are seen early in October, and disappear generally on the approach of the deep storms of snow, though straggling parties are still found nearly throughout the winter. In the other States to the South they are more common at this season, and are particularly numerous in South Carolina and Georgia, frequenting open plains, old fields, common grounds, and the dry shores and banks of bays and rivers, keeping constantly on the ground, and roving about in families under the guidance of the older birds, who watching for any approaching danger, give the alarm to the young in a plaintive call, very similar to that which is uttered by the Sky-lark in the same circumstances. Inseparable in all their movements, like the hen and her fostered chickens, they roost together in a close ring or company, by the mere edge of some sheltering weed or tuft of grass on the dry and gravelly ground; and, thickly and warmly clad, they abide the frost and the storm with hardy indifference. They fly rather high and loose, in scattered companies, and follow no regular time of migration, but move onward only as their present resources begin to fail. They are usually fat, esteemed as food, and are frequently seen exposed for sale in our markets. Their diet, as usual, consists of seeds which still remain on the grass and weeds they frequent, and they swallow a considerable portion of gravel to assist their digestion. They also collect the eggs and dormant larvæ of insects when they fall in their way.

OF THE WARBLERS IN GENERAL.

THE Warblers have a weak and slender bill; small and somewhat depressed nostrils; and the tongue cloven at the end. The exterior toe is joined beneath to the base of the middle one.

Most of these birds prey on insects. Some of them are gregarious, and migrate at the approach of the cold weather, to warmer climates. This is a very extensive tribe, containing in the whole above a hundred and seventy species, of which England boasts nearly twenty.

THE NIGHTINGALE.

The Nightingale, though greatly and deservedly esteemed for the excellence of its song, is not remarkable for variety or richness of colors. It usually leaves us about the middle of September, in order, as it is supposed to retire to the distant regions of Asia. This bird returns regularly in the first days of April. Mr. Barrington kept a fine nightingale for three years, during which time he paid particular attention to its song. Its tone was infinitely more mellow than that of any other bird; though at the same time, by a proper

exertion, it could be excessively brilliant. When this bird *sang its song round*, in its whole compass, he observed sixteen different beginnings and closes; at the same time that the intermediate notes were commonly varied in their succession with so much judgment, as to produce a most pleasing variety. Another point of superiority in the Nightingale, is its continuance of song without a pause; which Mr. Barrington observed to be sometimes not less than twenty seconds. Whenever respiration, however, became necessary, it was taken with as much judgment as by an opera-singer.

In this place it may be remarked, that the Nightingales in general, in a wild state, do not sing above ten weeks in the year; while those confined in a cage continue their song for nine or ten months; and a caged Nightingale sings much more sweetly than those which we hear abroad in the spring. The latter, as the bird-fanciers term it, are so *rank* that they seldom sing anything but short and loud jerks; which, consequently, cannot be compared to the notes of a caged bird, since the instrument is thus overstrained.

From the dissections of several birds made by Mr. John Hunter, at the request of the Hon. Daines Barrington, it appeared that, in the best singers, the muscles of the larynx were the strongest. Those in the Nightingale were stronger than in any other bird of the same size. When we consider the size of many singing birds, it is really amazing to what a distance their notes can be heard. It is supposed that the song of a Nightingale may be heard above half a mile if the evening be calm.

Nightingales will adopt the notes of other birds; and they will even chaunt the stiff airs of a Nightingale-pipe. They may be instructed to sing by turns with a chorus, and to repeat their couplet at the proper time. Mr. Stackhouse, of Pendarvis in Cornwall, informs me that he has remarked of the Nightingale that it will modulate its voice to any given key: he says, if any person whistle a note, the bird will immediately try, in its strain, an unison with it. Nightingales may also be taught to articulate words.

Nightingales are solitary birds; never associating in flocks, like many of the smaller birds, but hiding themselves in the thickest parts of hedges and bushes, and seldom singing but during the night.

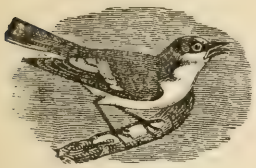
The London bird-catchers catch Nightingales in net-traps, (somewhat larger than cabbage-nets,) the bottoms of which are surrounded with an iron ring. These are baited with meal-worms from bakers' shops; and ten or a dozen birds have sometimes been caught in a day by this means

THE PENSILE WARBLER.

The Pensile Warbler is nearly five inches long. The bill is dusky; the head grayish black; and the back deep gray. Round the eye there is a white streak, and between that and the bill a range of yellow dots. The throat, neck, and breast, are yellow. The belly is white; and the sides of the neck and body are dotted with black spots. The

wing-coverts are white and black, in bands. The tail is dark gray, having the four outer feathers marked with large spots of white.

The sagacity displayed by this bird in building and placing its nest, is truly remarkable. She does not fix it at the forking of the branches, as is usual with most other birds; but she suspends it to a kind of binders, which hang from tree to tree, but particularly from branches that bend over the rivers and deep ravines. The nest consists of dry blades of grass, the ribs of leaves, and exceedingly small roots, interwoven with great art; it is fastened on, or rather it is worked into the pendent strings. It is in fact a small bed, rolled into a ball, so thick and compact as to exclude the rain; and it rocks in the wind without receiving any injury.



THE PENSILE WARBLER.

But the elements are not the only enemies against which this bird has to struggle; with wonderful sagacity it provides for the protection of its nest from other accidents. The opening is neither made on the top nor the sides of the nest, but at the bottom. Nor is the entrance direct. After the bird has made its way into the vestibule, it must pass over a kind of partition, and through another aperture, before it descends into the abode of its family. This lodgment is round and soft; being lined with a species of lichen, which grows on the trees, or with the silky down of plants.

The birds of this species have a very delicate song, which is continued throughout the year. They are natives of St. Domingo, and some other of the West India islands, where they feed chiefly on insects and fruit.

THE COMMON WAGTAIL.

These active and lively little birds run about the sides of ponds and small streams, in search of insects and worms; and in the spring and autumn are constant attendants on the plough, for the sake of the worms thrown up by that instrument.



COMMON WAGTAIL.

The generality of the Wagtails disappear in the autumn; but how they dispose of themselves during the winter, is somewhat difficult to account for. They are often to be seen even in the middle of winter. If there happen to be a fine day, and the sun shine bright, they are sure to make their appearance; chirping briskly, and seeming delighted with the fine weather, though they had not perhaps been seen for three weeks or a month before. Whence then do they come?

Certainly not from a far distant country, there not being time for a very long journey in the space of a single day; and, besides, they never seem to be tired or lifeless, but are very brisk and lively, on such occasions.

THE YELLOW WAGTAIL.

The Yellow Wagtail is very similar in habits to the more common Pied Wagtail, but the yellow tints of some of its feathers, somewhat resembling those of the Yellow Hammer, at once distinguish it.



YELLOW WAGTAIL.

THE WHEAT-EAR.

The head and back of the male are of a light gray, tinged with red. Over each eye there is a white line: beneath that is a broad black stroke, which passes across each eye to the hinder part of the head. The rump and lower half of the tail are white: the upper half black. The underside of the body is white, tinged with yellow: on the neck this color inclines to red. The quill-feathers are black, edged with reddish brown. The colors of the female are more dull: this sex wants the black marks across the eyes; and the bar of white on the tail is narrower than that in the male.

This bird visits England annually in the middle of March, and leaves in September. The females come first, about a fortnight before the males; and they continue to come until the middle of May. In some parts of England they are seen in great numbers, and are much esteemed for the table. About Eastbourn, in Sussex, they are caught by means of snares made of horse-hair, placed beneath a long turf. Being very timid birds, the motion even of a cloud, or the appearance of a Hawk, will immediately drive them into the traps. These traps are first set every year on St. James's day, the twenty-fifth of July; soon after which they are caught in astonishing numbers, considering that they are not gregarious, and that more than two or three are scarcely ever seen flying together. The number annually ensnared in the district of Eastbourn alone, is said to amount to nearly two thousand dozen. The birds caught are chiefly young-ones, and they are invariably found in the greatest numbers when an easterly wind prevails; they always come against the wind. A gentleman informed Mr. Markwick of Cattsfield, that his father's shepherd once caught eighty-four dozen of them in a

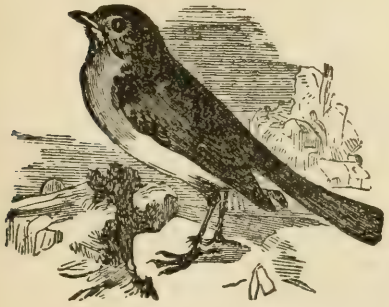
day. Great quantities of Wheat-ears are eaten on the spot by the inhabitants; others, are picked and sent to London poulterers; and many are potted, being much esteemed in England, as the Ortolons are on the continent.

The vast abundance of these birds on the downs about Eastbourn, is supposed by Mr. Pennant to be occasioned by a species of fly, their favorite food, that feeds on the wild thyme, and abounds on the adjacent hills.

A few of the birds breed in the old Rabbit-burrows there. Their nest is large, and made of dried grass, Rabbits' down, a few feathers, and horse-hair. The eggs are from six to eight in number, and of a light color.

THE RED-BREAST.

The Red-breast has usually been reckoned among the birds of passage; but, as M. de Buffon has elegantly expressed himself, the departure in the autumn "not being proclaimed among the Red-breasts, as among other birds at that season collected into flocks, many stay behind; and these are either the young and inexperienced, or some which can derive support from the slender resources of winter. In that season they visit our dwellings, and seek the warmest and most sheltered situations; and, if any one happens still to continue in the woods, it becomes the companion of the faggot-maker, cherishes itself at his fire, pecks at his bread, and flutters the whole day round him, chirping its slender *pip*. But, when the cold grows more severe, and thick snows cover the ground, it approaches our houses, and taps at the window with its bill, as if to entreat an asylum, which is cheerfully granted; and it repays the favor by the most amiable familiarity, gathering the crumbs from the table, distinguishing affectionately the people of the house, and assuming a warble, not indeed so rich as that in the spring, but more delicate. This it retains through all the rigors of the season; to hail each day the kindness of its host, and the sweetness of its retreat. There it remains tranquil, till the returning spring awakens new desires, and invites to other pleasures: it now becomes uneasy, and impatient to recover its liberty."



RED-BREAST

The Red-breast generally builds its nest among the roots of trees, in some concealed spot near the ground. This is composed of dried leaves, mixed with hair and moss, and lined with feathers. The female lays from five to seven eggs. In order the more successfully to conceal its nest, we are told that it covers it with leaves, suffering only a narrow winding entrance under the heap to be left.

This bird feeds principally on insects and worms; and its skill in preparing the latter is somewhat remarkable. It takes a worm by one extremity, in its beak, and beats it on the ground till the inner part comes away. Then seizing it in a similar manner by the other end, it entirely cleanses the outer part, which alone it eats.

The general familiarity of this bird has obtained for it a peculiar denomination in several countries. The inhabitants of Bornholm call it *Tommi Liden ;* the Norwegians, *Peter Ronsmad ;* the Germans, *Thomas Gierdet ;* and we give to it the familiar appellation of *Robin Red breast.*

THE AMERICAN ROBIN, OR MIGRATING THRUSH.

The familiar and welcome Robin is found in summer throughout the North American continent from the desolate regions of Hudson's Bay, in the 53d degree, to the table land of Mexico; it is likewise a denizen of the territory of the Oregon, on the western base of the Rocky Mountains. In all this vast space, the American Fieldfare rears its young, avoiding only the warmer maritime districts, to which, however, they flock for support during the inclemency of winter. In like manner the common Fieldfare migrates at a late season from the northern districts of Siberia and Lapland to pass the winter in the milder parts of Europe. The Robin has no fixed time for migration, nor any particular rendezvous; they retire from the higher latitudes only as their food begins to fail, and so leisurely and desultory are their movements, that they make their appearance in straggling parties even in Massachusetts, feeding on winter berries, till driven to the south by deep and inundating snows. At this season they swarm in the Southern States, though they never move in large bodies. The holly, prinos, sumach, smilax, candle-berry myrtle, and the Virginian juniper now afford them an ample repast in the winter, in the absence of the more juicy berries of autumn, and the insects and worms of the milder season. Even in the vicinity of Boston, flocks of Robins are seen, in certain seasons, assembling round open springs in the depth of



AMERICAN ROBIN.

winter, having arrived probably from the colder interior of the state, and in those situations they are consequently often trapped and killed in great numbers

THE GROUND ROBIN, OR TOWWEE FINCH.

It is a very common, humble, and unsuspicious bird, dwelling commonly in the thick dark woods and their borders, flying low, and frequenting thickets near streams of water, where it spends much time in scratching up the withered leaves for worms and their larvæ, and it is particularly fond of Wire-worms (or *Iuli*), as well as various kinds of seeds and gravel. Its rustling scratch among the leafy carpet of the forest is, often, the only indication of its presence, excepting now and then a call upon its mate (*tow-wee, tow-wee, tow-weet,*) with which it is almost constantly associated. While thus busily engaged in foraging for subsistence, it may be watched and approached without showing any alarm; and taking a look often at the observer, without suspicion, it scratches up the leaves as before. This call of recognition is uttered in a low and somewhat sad tone, and if not soon answered, it becomes louder and interrogatory, *tow-wee, towee?* and terminates often with *toweet.* They are accused of sometimes visiting the pea-fields to feed, but occasion no sensible damage.



ROBIN.

THE WREN.

The Wren is found throughout Europe and America. Its nest is curiously constructed, chiefly of moss, and lined with feathers: in shape it is almost oval, with only one small entrance. This nest is generally found in some corner of an out-house, stack of wood, or hole in a wall, near our habitations; but when the Wren builds in woods, it generally does this in some bush near the ground, on the

stump of a tree, or even on the ground. The female lays from ten to eighteen eggs. The materials of the nest are generally adapted to the place where it is formed. If against a hay-rick, its exterior is composed of hay: if against the side of a tree clad with white lichens, it is covered with that substance; and, if built against a tree covered with green moss, or in a bank, its exterior bears a similar correspondence.



THE WREN.

The lining is invariably of feathers. The Wren does not, as is usual with most other birds, begin the bottom of its nest first. When against a tree, its primary operation is to trace upon the bark, the outline, and thus to fasten it with equal strength to all parts. It then, in succession, closes the sides and top, leaving only a small hole for entrance. If the nest be placed under a bank, the top is first begun and is well secured in some small cavity; and by this the fabric is suspended.

The song of the Wren is much admired; being a pleasing warble, and louder than could be expected from the size of the bird. This it continues throughout the year: these birds have been heard to sing unconcerned even during a fall of snow. They also sing very late in the evening; though not, like the Nightingale, after dark.

THE CHAFFINCH, OR PIEFINCH.

The Chaffinch or Piefinch, as it is often called, is so well known as to need no description. It is chiefly remarkable for the beautiful nest which it constructs. The forks of a thorn or a wild crab-tree are favorite places for the nest, which is composed of mosses, hair, wool, and feathers, covered on the exterior with lichens, and mosses, so exactly resembling the bough on which the nest is placed, that the eye is often deceived by its appearance. In the nest four or five very pretty eggs are laid: these are of a reddish-brown color, sparely marked with deep brown spots, especially towards the larger end.



THE CHAFFINCH.

The name Cœlebs or Bachelor, is given to this bird, because the females quit this country about November, leaving large flocks of males behind them.

THE SISKIN.

"The Siskin is a common bird in all the high parts of Aberdeenshire, which abound in fir-woods. They build generally near the extremities of the branches of tall fir-trees, or near the summit of the tree. Sometimes the nest is found in plantations of young fir-wood. In one instance, I met with a nest not three feet from the ground. I visited it every day until four or five eggs were deposited. During incubation the female showed no fear at my approach. On bringing my hand close to the nest, she showed some inclination to pugnacity, and tried to frighten me away with her open bill, following my hand round and round when I attempted to touch her. At last she would only look anxiously round to my finger without making any attack on me. The nest was formed of small twigs of birch or heath outside, and neatly lined with hair." Its eggs are a bluish-white spotted with purplish-red.



THE SISKIN.

THE HEDGE-ACCENTOR, OR HEDGE-SPARROW.

The Hedge-Accentor, or Hedge-Sparrow, is one of our commonest English birds, closely resembling the common Sparrow, in appearance. The nest is built in holes, and contains five blue eggs like those of the Redstart, but stouter in shape, and of a deeper blue.

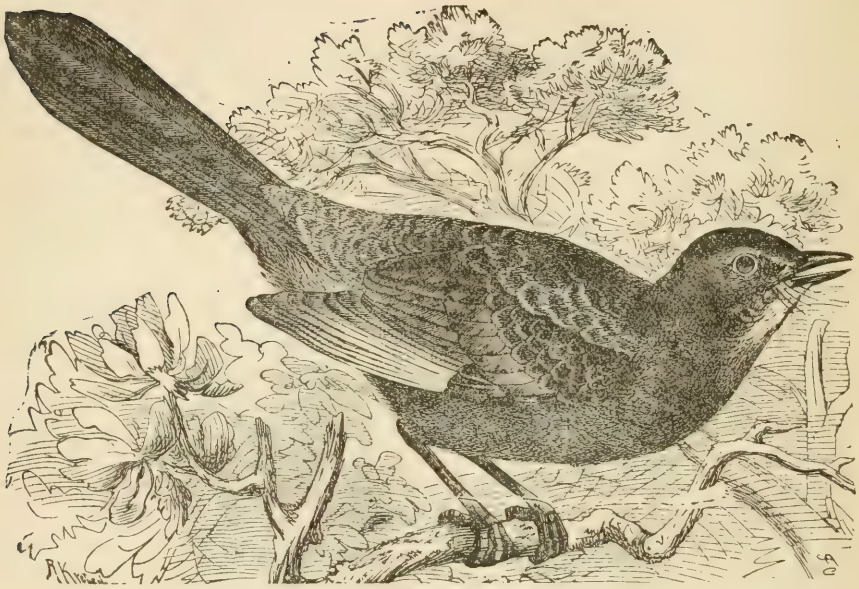
It is often very bold when engaged in sitting, and will permit a near approach without leaving the nest. I have repeatedly visited the nest of one of these birds while the female was sitting, and have parted the boughs of the shrub where the nest was placed, in order to get a good view, while the hen bird still sat quietly in the nest anxiously watching every movement but not attempting to stir.



HEDGE ACCENTOR.

THE CAT-BIRD.

This quaint and familiar songster passes the winter in the southern extremities of the United States. About the middle of April they are



CAT-BIRD.

first seen in Pennsylvania. They continue their migration also to Canada.

The Cat-bird often tunes his cheerful song before the break of day, hopping from bush to bush, with great agility after his insect prey, while yet scarcely distinguishable amidst the dusky shadows of the dawn. The notes of different individuals vary considerably A quaint sweetness, however, prevails in all his efforts, and his song is frequently made up of short and blended imitations of other birds, given, however, with great emphasis, melody, and variety of tone; and, like the Nightingale, invading the hours of repose, in the late twilight of a summer's evening, when scarce another note is heard, but the hum of the drowsy beetle, his music attains its full effect, and often rises and falls with all the swell and studied cadence of finished harmony. During the heat of the day, or late in the morning, the variety of his song declines, or he pursues his employment in silence and retirement.

THE AMERICAN FIERY-CROWNED KINGLET.

This diminutive bird is found, according to the season, not only throughout North America, but even in the West Indies. A second species with a Fiery Crest (*R. ignicapillus*), and a *third* indigenous to Asia, are very nearly related to the present; the first having been generally confounded with it, or considered as a variety of the same

species. Learned ornithologists have referred our bird without hesitation to the Fiery-crested Wren, with which, however, it only agrees in the brilliancy of the crown; and, instead of being less, is indeed larger than the true Golden-crested species. Like the former, they appear associated only in pairs, and are seen on their southern route, in part of Massachusetts, a few days in October, and about the middle of the month, or a little earlier or later according to the setting in of the season, as they appear to fly before the desolating storms of the northern regions, whither they retire about May to breed. Some of these birds remain in Pennsylvania until December or January, proceeding probably but little farther south during the winter. They are not known to reside in any part of New England, retiring to the remote and desolate limits of the farthest north.

THE BLUE-BIRD.

This well known and familiar favorite inhabits almost the whole eastern side of the continent of America, from the 48th parallel to the very line of the tropics. Some appear to migrate in winter to the Bermudas and Brahama islands, though most of those which pass the summer in the North only retire to the Southern States, or the table land of Mexico. In South Carolina and Georgia they were abundant in January and February, and even on the 12th and 28th of the former month, the weather being mild, a few of these wanderers warbled out their simple notes from the naked limbs of the long-leaved pines. Sometimes they even pass the winter in Pennsylvania, or at least make their appearance with almost every relenting of the severity of the winter or warm gleam of thawing sunshine. From this circumstance of their roving about in quest of their scanty food, like the hard-pressed and hungry Robin Red-breast, who by degrees gains such courage from necessity, as to enter the cottage for his



THE BLUE-BIRD.

allowed crumbs; it has, without foundation, been supposed that our Blue-bird, in the intervals of his absence, passes the tedious and stormy time in a state of dormancy, but it is more probable that he flies to some sheltered glade, to glean his frugal fare from cedar berries.



SEDGE WARBLERS.

SEDGE WARBLERS.

The Sedge Warbler is about five inches and a half long, and eight and a quarter broad. This species inhabits all the European countries that extend from sixty-eight degrees, north latitude, as far as Greece and Spain, usually arriving in April and leaving again in October, when it wanders as far as northern Africa. In Europe it always frequents such marshy districts as are overgrown with rushes, sedge grass, and small-leafed water plants. Its flight is very unsteady, but in other respects its movements are unusually nimble and agile; the song is pleasing, flute-like and very varied. Except during the period of incubation, which commences in June, these birds usually lead a very retired life amid the beds of grass or rushes, but at the latter season they emerge, and take up their quarters on the surrounding trees and bushes, where they engage in a series of varied concerts, each inspired with the

hope of outdoing its numerous rivals in the favor of some attractive female. Should any one of the feathered competitors venture to intrude upon the same branch as the energetic singer, he is at once driven with such violence from the spot as to prevent a repetition of the offence. Like other members of this family, the Sedge Warbler subsists principally upon insects, and occasionally devours various kinds of berries. The nest, which is placed amongst clumps of sedge grass or rushes, on marshy ground, at not more than a foot and a half from the surface, is firmly suspended to the surrounding stalks, and formed of hay, stubble, roots and green moss, woven thickly and firmly together, and lined with horsehair, feathers, and delicate blades of grass.

THE GOLDEN-CRESTED WREN.

The head and upper part of the body of this Wren, are of a deep reddish brown: above each eye there is a stroke of white: the back, and the coverts of the wings and tail, are marked with slender transverse black lines; the quill-feathers with bars of black and red. The throat is of a yellowish white. The belly and sides are crossed with narrow dusky and pale reddish-brown lines. The tail is crossed with dusky bars.



THE GOLDEN-CRESTED WREN.

The song of this beautiful little bird, the smallest of all the British feathered race, is extremely delicate and pleasing. It is not much unlike, but it is not quite so loud as, that of the Common Wren. The Golden-crested Wren may be easily known in winter by its shrill squeak, somewhat resembling the crinking of a Grasshopper. Except in the frosts, it continues its song during the whole year. These birds are very agile: they are almost continually in motion, fluttering from branch to branch, creeping on all sides of the trees, clinging to them in every situation, and often hanging with their backs downward, in the manner of the Titmice.

Their food consists chiefly of minute insects, which they find in the crevices of the bark of trees, or catch nimbly on the wing. They also eat the eggs of insects, small worms, and various kind of seeds. They delight to frequent the largest trees, such as oaks, elms, and firs.

The nest of the Golden-crested Wren is an interesting fabric. It somewhat resembles that of the Chaffinch; and is frequently formed amongst the leaves at the tip of a branch of a fir-tree, where it swings about in high winds, like a pendulum. It is oval, very deep,

and has a small hole near the middle, for the ingress and egress of the bird. The materials composing its exterior are different species of moss; and within, it is lined with wool, hair, and feathers. The female lays from ten to eighteen eggs, and not unusually brings up as many young-ones. "It may be ranked among those daily miracles of which we take no notice, that this bird should feed so great a number as this without passing over one, and that also in utter darkness." The eggs are, in size, scarcely larger than peas, and are of a white color, sprinkled with small dull spots.

These birds are found in various parts of Europe, Asia and America. They are said to bear well every change of temperature, from the greatest degree of heat to that of the severest cold. They continue with us during the whole year: but Mr. Pennant states that they cross annually from the Orkneys to the Shetland islands, where they breed, and from which they return before the winter This is a long flight (sixty miles) for so small a bird.

THE WILLOW-WREN.

This bird is somewhat larger than the Common Wren. The upper parts of the body are of a pale olive-green; the under parts are pale yellow, and a streak of yellow passes over the eyes. The wings and tail are brown, edged with yellowish green; and the legs are yellowish.



THE WILLOW-WREN.

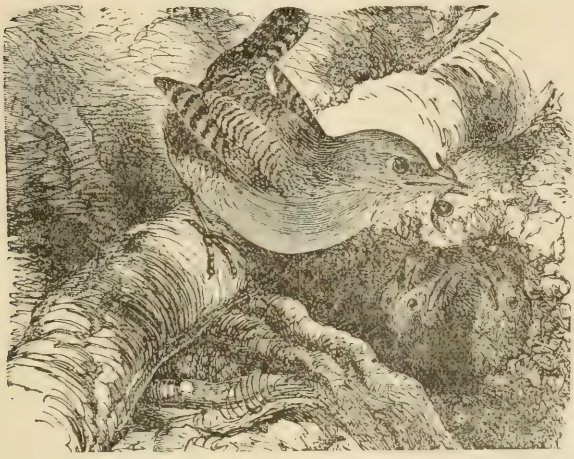
The Willow-Wren is not uncommon in many parts of England. It is migratory, visiting there usually about the middle of April, and taking its departure towards the end of September. The females construct their nests in holes at the roots of trees, in hollows of dry banks and other similar places. These are round, and not unlike the nest of the Wren. The eggs are dusky white, marked with reddish spots; and are five in number.

A Willow-Wren had built in a bank of one of the fields of Mr. White, near Selborne. This bird a friend and himself observed, as she sat in her nest; but they were particularly careful not to disturb her, though she eyed them with some degree of jealousy. Some days afterwards, as they passed the same way, they were desirous of remarking how the brood went on; but no nest could be found, till Mr. White happened to take up a large bundle of long green moss, which had been thrown as it were carelessly over the nest, in order to mislead the eye of any impertinent obtruder.

The Willow-Wren may justly be termed the Nightingale of the northern snowy countries of Europe. It settles on the most lofty branches of the birch-trees, and makes the air resound with its bold and melodious song. It is always smart and cheerful—to it all weathers are alike. The big drops of a thunder shower no more wet it than the drizzle of a Scotch mist.

THE AMERICAN HOUSE-WREN.

This lively, cheerful, capricious, and well known little minstrel, says Nuttall, is only a summer resident in the United States. Its northern migrations extend to Labrador. But it resides and rears its young principally in the Middle States. My friend, Mr. Say, also observed this species near Pembino, beyond the sources of the Mississippi, in the Western wilderness of the 49th degree of latitude. It is likewise said to be an inhabitant of Surinam within the tropics, where its delightful melody has gained it the nickname of the Nightingale. This region, or the intermediate country of Mexico, is probably the winter quarters of our domestic favorite. In Louisiana it is unknown even as a transient visitor, migrating apparently to the east of the Mississippi, and sedulously avoiding the region generally inhabited by the Carolina Wren. It is a matter of surprise how this, and some other species, with wings so short and a flight so fluttering, are ever capable of arriving and returning from such distant countries. At any rate, come from where he may, he makes his appearance in the middle States about the 12th or 15th of April, and is seen in New England in the latter end of that month or by the beginning of May. They take their departure for the South towards the close of September, or early in October, and are not known to winter within the limits of the Union.



HOUSE WREN FEEDING HER YOUNG.

Some time in the early part of May, our little social visitor enters actively into the cares as well as pleasures which preside instinctively over the fiat of propagation. His nest, from preference, near the house, is placed beneath the eaves, in some remote corner under a shed, outhouse, barn, or in a hollow orchard tree; also in the deserted cell of the Woodpecker, and, when provided with the convenience, in a wooden box along with the Martins and Blue-birds. He will make his nest even in an old hat, nailed up, and perforated with a hole for entrance, or the skull of an Ox stuck upon a pole; and Audubon saw one deposited in the pocket of a broken down carriage. So pertinacious is the House Wren in thus claiming the convenience and protection of human society, that according to Wilson, an instance once

occurred where a nest was made in the sleeve of a mower's coat, which, in the month of June, was hung up accidentally for two or three days in a shed near a barn.

THE CAROLINA, OR MOCKING WREN.

THIS remarkable, mimicking, and Musical Wren, says Nuttall, is a constant resident in the Southern States, from Virginia to Florida, but is rarely seen at any season north of the line of Maryland or Delaware, though, attracted by the great river courses, they are abundant from Pittsburg to New Orleans. A few individuals stray, in the course of the spring, as far as the line of New York, and appear in New Jersey and the vicinity of Philadelphia early in the month of May. On the 17th of April, returning from a Southern tour of great extent, I again recognised my old and pleasing acquaintance, by his usual note, near Chester, on the Delaware, where, I have little doubt, a few remain and pass the summer, retiring to the South only as the weather becomes inclement. On the banks of the Patapsco, near Baltimore, their song is still heard to the close of November. According to Audubon, the nest of this bird is usually placed in a hole in some low and decayed tree, or in a fence post; sometimes also in a stable, barn, or out-house. The materials employed are hay, dry grass, and leaves, for the outer part; with a lining of horse-hair, or the capillary dry fibres of the Long-moss (*Tillandsia.* Sometimes the nest is five or six inches deep, but, with the usual precaution of the family, so arrow in the entrance as only to admit of one of the birds at a time. The eggs, five to eight, are oval, and greyish-white, spotted with reddish-brown. Like the common species, an individual (probably one of the young birds) has been observed to roost for a time in an old Wood-Thrush's nest which had been filled with fallen leaves. They are so prolific as to raise two, and sometimes three broods in a season.



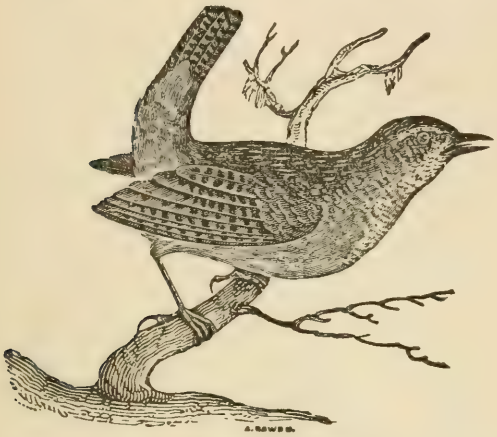
THE MOCKING-WREN.

SHORT-BILLED MARSH-WREN.

THIS amusing and not unmusical little species inhabits the lowest marshy meadows, but does not frequent the reed-flats. It never visits cultivated grounds, and is at all times shy, timid, and suspicious. It arrives in Massachusetts about the close of the first week in May, and

retires to the South by the middle of September at farthest, probably by night, as it is never seen in progress, so that its northern residence is only prolonged about four months. In winter they are seen from South Carolina to Texas.

The nest of the Short-Billed Marsh-Wren is made wholly of dry, or partly green sedge, bent usually from the top of the grassy tuft in which the fabric is situated. With much ingenuity and labor these simple materials are loosely entwined together into a spherical form, with a small and rather obscure entrance left in the side; a thin lining is sometimes added to the whole, of the linty fibres of the silk weed, or some other similar material. The eggs, pure white, and destitute of spots, are probably from six to eight. In a nest containing seven eggs, there were three of them larger than the rest, and perfectly fresh, while the four *smaller* were far advanced towards hatching; from this circumstance we may fairly infer that *two* different individuals had laid in the same nest: a circumstance more common among wild birds than is generally imagined. This is also the more remarkable, as the male of this species, like many other Wrens, is much employed in making nests, of which not more than one in three or four are ever occupied by the females!



SHORT-BILLED MARSH-WREN.

THE TAILOR-BIRD.

This, like the last two, is a very small species, measuring scarcely more than three inches in length.

It is a native of India.



TAILOR BIRD'S NEST

The nest of the Tailor-bird is a very remarkable production. Its exterior is constructed of two leaves; the one generally dead, which the bird fixes, at the end of some branch, to the side of a living one, by sewing both together with little filaments, in the manner of a pouch or purse, and open at the top. In this operation the bill of the bird serves as a needle. Sometimes, instead of a dead leaf and a living one, two living leaves are sowed together; and, thus connected they seem rather the work of human art than of an uninstructed animal. After the operation of sewing is finished, the cavity is

lined with feathers and soft vegetable down. The nest and birds are together so extremely light, that the leaves of the most exterior and slender twigs of the trees are chosen for the purpose; and, thus situated, the brood is completely secured from the depredations of every invader. The Common Wren is smaller; the plumage is reddish brown, streaked with pale black. It is lively and social, constantly seeking the vicinity of man.



THE COMMON WREN.

OF THE TITMICE IN GENERAL.

THE bill is straight, strong, hard, sharp-pointed, and a little compressed. The nostrils are round, and covered with bristles. The tongue appears as if cut off at the extremity, and is terminated by three or four bristles. The toes are divided to their origin; and the back toe is very large and strong.

This is a diminutive but sprightly race of birds; possessed both of courage and strength. Their general food consists of seeds, fruit, and insects; and a few of them eat flesh. Some of them will venture to assault birds that are twice or thrice their own bulk; and, in this case, they direct their aim chiefly at the eyes. They often seize upon birds that are weaker than themselves: these they kill, and,

having picked a hole in the skull, eat out the brain. They are very prolific, laying eighteen or twenty eggs at a time. Their voice is, in general, unpleasant.

THE PENDULINE TITMOUSE, AND CAPE TITMOUSE.

These birds are about four inches and a half in length. The fore part of the head is whitish, and the hind part and the neck are ash-colored. The upper parts of the plumage are grey; the forehead is black; the throat and the front of the neck are of a very pale ash-color; and the rest of the under parts are yellowish. The quills and tail are brown, edged with white; and the legs are reddish gray.



PENDULINE TITMOUSE.

In the construction of their nests, the Penduline or Bottle Titmice employ chiefly the light down of the willow, the poplar, and the aspen; or of thistles, dandelions, and other flowers. With their bill they entwine these filamentous substances, and form a thick, close web, almost like cloth, this they fortify externally with fibres and small roots, which penetrate into the texture, and in some measure compose the basis of the nest. They line the inside with down, but not woven, in order that their offspring may lie soft. They close the nest above, for the purpose of confining the warmth; and they suspend it with hemp, nettles, &c., from the cleft of a small pliant branch, (over some stream) that it may rock more gently, assisted by the spring of the branch. In this situation the brood are well supplied with insects, which constitute their chief food; and they are also thus protected from their enemies. The nest sometimes resembles a bag, and sometimes a short purse. The aperture is made in the side, is nearly round, not more than an inch and a half in diameter, and commonly surrounded by a brim more or less protuberant.

These nests are seen in great numbers in the fens of Bologna, and in those of Tuscany, Lithuania, Poland, and Germany. The peasants regard them with superstitious veneration: one of them is usually suspended near the door of each cottage; and the possessors esteem it a defence against thunder, and its little architect is a sacred bird. The penduline Titmice frequent watery places, for the sake of aquatic insects, on which they feed.

The Cape Titmouse, constructs its nest of the down of a species of asclepias. This luxurious nest is made of the texture of flannel, and equals fleecy hosiery in softness. Near the upper end projects a small tube, about an inch in length, with an orifice about three-fourths of an inch in diameter. Immediately under the tube is a small hole in the side, that has no communication with the interior of the nest; in this hole, the male sits at night, and thus both male and female are screened from the weather



THE CAPE TITMOUSE

THE BLUE TITMOUSE.

The bill is short and dusky. The crown of the head is of a fine blue color. From the bill to the eyes there is a black line. The forehead and cheeks are white. The back is of a yellowish green; and the lower side of the body yellow. The wings and tail are blue, the former marked transversely with a white bar. The legs are lead-colored.



BLUE TITMOUSE.

This busy little bird is frequently seen in our gardens and orchards, where its operations are much dreaded by the over-anxious gardener, who fears, lest, in pursuit of its favorite food, which is often lodged in the tender buds, it may destroy them also, to the injury of his future harvest: not considering that the Titmouse is the means of destroying a much more dangerous enemy (the caterpillar).

THE GREAT TITMOUSE.

The Great Titmouse is common in this country, frequenting gardens, orchards, copses, etc. During the spring it is very active in the capture of insects, but in autumn and winter it is forced to content itself with grains and seeds of various descriptions. Gilbert White, in his "Selborne," mentions that he has seen the Great Tit "while it hung with its back downwards, to my no small delight and admiration, draw straws lengthwise from the eaves of thatched houses, in order to pull out the flies that were concealed among



THE GREAT TITMOUSE.

them, and that in such numbers that they quite defaced the thatch, and gave it a ragged appearance."

The nest of this bird is built in the hole of a wall, or a decayed tree, and in it are placed six or eight eggs, of a white color, spotted with reddish brown. The length of the bird is about six inches.



1. GREATER TIT. 2. BLUE TIT. 3. COAL TIT. 4. MARSH TIT.

THE LONG-TAILED TITMOUSE.

The Long-tailed Titmouse is another well-known species of this amusing family. Unlike the other Tits, it does not frequent human habitations during the winter, but may be seen in great numbers twisting and creeping about the branches of hedge-rows and field trees. In summer they are quite as bold as their relations, and especially favor apple-trees, for the sake of the diseased buds, which they pick off and devour,

thereby drawing upon themselves the vengeance of the gardener, who prepares his gun, fires at the supposed depredators, and possibly succeeds in killing them; but he has also succeeded in doing more damage to the healthy buds by his spare shot, than a score of Tits would injure during the entire season.

The beautiful and elaborate nest which this bird constructs is one of its chief peculiarities. It is oval in shape, and entirely closed, except one small hole at the side, just large enough to admit the bird. The exterior of the nest is usually covered with lichens, and is lined with a thick layer of soft feathers. In this warm and elegant habitation are laid from ten to fourteen eggs, which are small and very delicately spotted. The entire length of the bird is about five inches and a half.

THE COAL-TIT.

The Coal-Tit is very similar to the Blue-Tit in form, but smaller, being about four inches in length, and destitute of the lively colors which render that bird so agreeable to the eye. The breast of the Coal-Tit is of a greyish-white, the back yellowish-grey, and the feet and claws of a livid blue; the head and neck are of a deep black, (whence it has been called the Lesser Blackcap,) with a patch of white on each cheek, and another on the nape of the neck. This bird is not very common in England, but in Scotland, where it frequents the forests of pine and fir, it is more abundant, and may be seen through out the year, except in very severe weather, when it departs southward, or approaches the farm-houses and towns to seek for food.

THE MARSH-TIT.

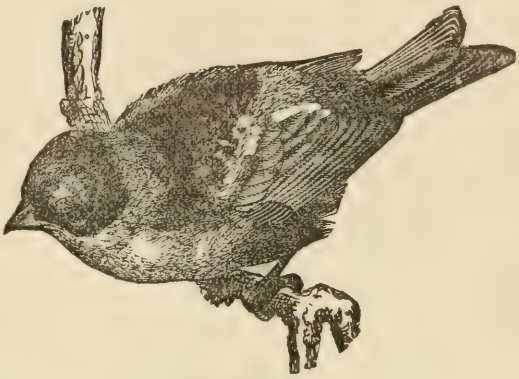
The Marsh-Tit is very like the preceding in color and form, though larger, but has no white on the nape of the neck. It is very common in the northern parts of England, but is seldom seen in Scotland above Fifeshire, and scarcely ever so far south as London. Although it may be sometimes met with in the woods in dry districts, it is more frequently to be found among the reeds in low marshy tracts, where it makes its nest, generally choosing some decayed willow for a foundation. The Marsh-Tit is also known provincially as the Smaller One-eye, Willow-Biter, Joe Bent, &c.

THE TUFTED TITMOUSE.

This species is six and a half inches long, and nine in the stretch of the wings. Above, dark bluish-ash; the front black tinged with reddish. Beneath sullied white, except the sides under the wings, which are pale reddish-brown. Legs and feet greyish blue. Bill black. Iris hazel. The crest high and pointed, like that of the common Blue Jay. Tail slightly forked. Tips of the wings dusky. Tongue blunt erding in four sharp points. Female very similar to the male.

CHICADEE, OR BLACK-CAPT TITMOUSE.

This familiar, hardy, and restless little bird chiefly inhabits the Northern and Middle States, as well as Canada in which it is even resident in winter round Hudson's Bay, and has been met with at 62° on the North-west coast. In all the Northern and Middle States, during autumn and winter, families of these birds are seen chattering and roving through the woods, busily engaged in gleaning their multifarious food, along with the preceding species, Nuthatches, and Creepers, the whole forming a busy, active, and noisy group, whose manners, food, and habits bring them together in a common pursuit. Their diet varies with the season, for besides insects, their larvæ, and eggs, of which they are more particularly fond, in the month of September they leave the woods and assemble familiarly in our orchards and gardens, and even enter the thronging cities in quest of that support which their native forests now deny them. Large seeds of many kinds, particularly those which are oily, as the Sun-flower, and Pine and Spruce Kernels are now sought after. These seeds, in the usual manner of the genus, are seized in the claws and held against the branch, until picked open by the bill to obtain their contents. Fat of various kinds is also greedily eaten, and they regularly watch the retreat of the hog-killers, in the country, to glean up the fragments of meat which adhere to the places where the carcases have been suspended.



THE CHICADEE.

Its quaint notes and jingling warble are heard even in winter on fine days when the weather relaxes in its severity. It adds by its presence, indomitable action, and chatter, an air of cheerfulness to the silent and dreary winters of the coldest parts of America. Dr. Richardson found it in the fur countries up to the 65th parallel, where it contrives to dwell throughout the whole year.

A woodcutter in Maine one day at work had scarcely hung up his basket of provisions when a flock of these birds, observing it, gathered into it and attacked a piece of cold beef, but after each peck he saw their heads raised above the edge, as if to guard against danger; when they were tired they left the basket and perched over his fire, where they sat till he began his dinner, when in the most plaintive tones they seemed to solicit a portion.

THE CEDAR BIRD, OR CHERRY BIRD.



CEDAR BIRD.

This common native wanderer, which in the summer extends its migrations to the remotest unpeopled regions of Canada,* is also found throughout the American continent to Mexico, and parties occasionally even roam to the tropical forest of Cayenne. In all this extensive geographical range, where great elevation or latitude tempers the climate so as to be favorable to the production of juicy fruits, the Cedar Bird will probably be found either almost wholly to reside or to pass the season of reproduction Like its European representative (the Waxen Chatterer,) it is capable of braving a considerable degree of cold, for in Pennsylvania and New Jersey some of these birds are seen throughout the winter, where as well as in the early part of the summer and fall, they are killed and brought to market, generally fat, and much esteemed as food. Silky softness of plumage, gentleness of disposition, innocence of character, extreme sociability, and an innate inextinguishable love of freedom, accompanied by a constant desire of wandering, are characteristic traits in the physical and moral portrait of the second as well as the preceding species of this peculiar and extraordinary genus.

Leaving the northern part of the continent, situated beyond the 40th degree, at the approach of winter, they assemble in companies of twenty to a hundred, and wander through the Southern States and Mexico to the confines of the equator, in all of which countries they are now either common or abundant. As observed by Audubon, their flight is easy, continued, and often performed at a considerable height; and they move in flocks or companies, making several turns before they alight. As the mildness of spring returns, and with it their favorite food, they re-appear in the Northern and Eastern States about the beginning of April, before the ripening of their favorite

* Seen by Mr. Say near Winipique river in latitude 50, and by Mr. Drummond on the south branch of the Saskatchewan.

fruits, the cherries and mulberries. But at this season, to repay the gardener for the tithe of his crop, their natural due, they fail not to assist in ridding his trees of more deadly enemies which infest them, and the small caterpillars, beetles, and various insects now constitute their only food; and for hours at a time they may be seen feeding on the all-despoiling Canker-worms, which infest our Apple trees and Elms. On these occasions, silent and sedate, after plentifully feeding, they sit dressing their feathers, in near contact on the same branch to the number of five or six; and as the season of selective attachment approaches, they may be observed pluming each other, and caressing with the most gentle fondness; a playfulness, in which, however, they are even surpassed by the contemned Raven, to which social and friendly family our Cedar Bird, different as he looks, has many traits of alliance.

THE BOHEMIAN WAXWING, OR WAXEN CHATTERER.

The Bohemian Waxwing, or Waxen Chatterer, is only occasionally seen in England during severe frosts, at which time flocks of them sometimes arrive. One of these birds was shot at Oxford in the winter of 1846. It is very common in Norway and Russia, and is plentiful in North America. The name of Waxwing is given to it from the singular appendages to the secondary quill feathers, bearing much resemblance to a drop of red sealing-wax pressed on the wing.



THE BOHEMIAN WAXWING.

Berries of all kinds, especially those of the dog-rose and the hawthorn, form the principal food of this bird; but it is related that when in captivity it rejects scarcely any vegetable substance, but loses at the same time all its vivacity and social habits. The note of the Waxwing is not unlike that of the Thrush, but it is very weak and more uncertain than the notes of that beau-

ıful songster. While singing it agitates the crest on its head, but shows scarcely any of that swelling in the throat so preceptible in the Canary and other singing birds.

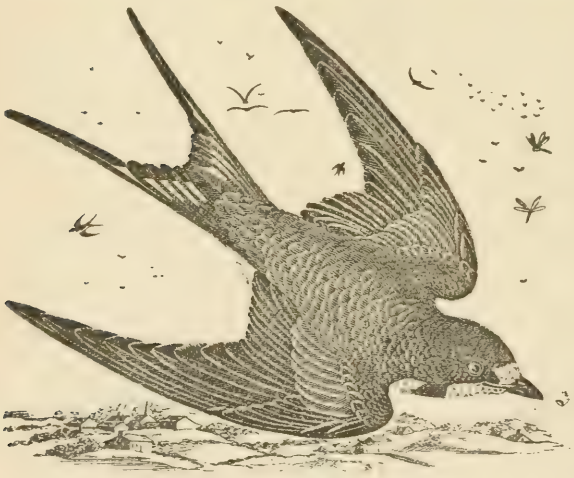
The length of the bird is rather more than eight inches.

THE JAPANESE CHATTERER.

This is a species found in Japan, with naked nostrils, and without the usual wax-like appendages to the wings which give this genus the name of Waxwing. It is ash-colored, with an ash-colored and red crest.

OF THE SWALLOWS IN GENERAL.

THE bill of the Swallow is short broad at the base, small at the point, and somewhat bent. The nostrils are open. The tongue is short, broad, and cloven. The tail, except in one species is forked; and the wings are long. The legs are short, and (except in four species, in which they are all placed forward) the toes are placed three before and one behind.



THE SWALLOW.

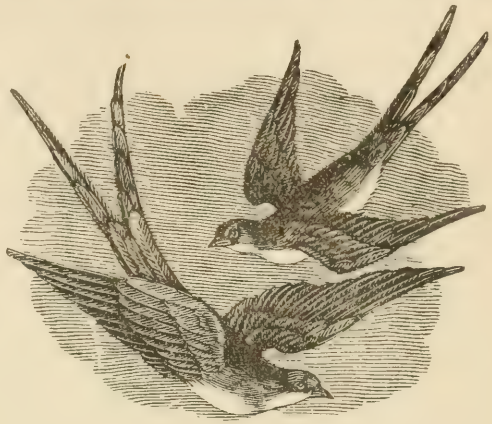
Swallows are easily distinguished from all other birds, not only by their general structure, but by their twittering voice, and their manner of life. They fly with great rapidity, seldom walk, and perform all their functions either on the wing or sitting. By means of their wide mouth they easily catch insects in the air, or on the surface of the water; and on these they subsist.

Naturalists have been much divided in their opinions respecting the migration of the Swallow tribe from this country.

That the actual migration of the Swallow tribe does take place, has been fully proved from a variety of well-attested facts; most of which have been taken from the observation of navigators who were eye-witnesses of their flights, and whose ships have sometimes afforded to them resting-places in their toilsome journeys.

THE CHIMNEY SWALLOW.

During the summer months this Swallow takes up its residence in this country, building its nest generally in the insides of our chimneys, a few feet from the top. This nest is composed of mud mixed with straw and hair, and lined with feathers. It lays four or five eggs, and has two broods in the year.



THE CHIMNEY SWALLOW.

The progressive method by which the young-ones are introduced to their proper habits, is very curious. They first, but not without some difficulty, emerge from the shaft: for a day or two they are fed on the chimney-top; and then are conducted to the dead, leafless bough of some neighboring tree, where, sitting in a row, they are attended by the parents with great assiduity. In a day or two after this, they are strong enough to fly, but they continue still unable to take their own food. They therefore play about near the place, where the dams are watching for flies; and, when a mouthful is collected, at a certain signal, the dam and the nestling advance, rising towards each other, and meeting at an angle; the young-one all the while uttering such a short quick note of gratitude and complacency, that a person must have paid very little regard to the wonders of nature, who has not remarked this scene.

As soon as the dam has disengaged herself from the first brood, she immediately commences her preparations for a second, which is introduced into the world about the middle or latter end of August.

During every part of the summer, the Swallow is a most instructive pattern of unwearied industry and affection: from morning to night, while there is a family to be supported, she spends the whole time in skimming along, and exerting the most sudden turns and quick evolutions: avenues, and long walks under hedges, pasture-fields, and mown meadows where cattle graze, are her delight, especially if there are trees interspersed, because in such spots insects most abound. When a fly is taken, a smart snap from her bill is to be heard, not unlike the noise of the shutting of a watch-case; but the motion of the mandibles is too quick for the eye.

The Swallow is the excubitor to the House-Martins and other little birds, announcing the approach of birds of prey: for as soon as a Hawk or an Owl appears the Swallow calls, with a shrill alarming note, all

his own fellows and the Martins about him; who pursue in a body and strike their enemy, till they have driven him from the place, darting down upon his back, and rising in a perpendicular line in perfect security. This bird will also sound the alarm, and strike at cats when they climb on the roofs of houses, or otherwise approach the nests.

Wonderful is the address, Mr. White justly observes, which this adroit bird exhibits in ascending and decending with security through the narrow passage of a chimney. When hovering over the mouth of the funnel, the vibrations of its wings acting on the confined air, occasion a rumbling like distant thunder. It is not improbable that the dam submits to the inconvenience of having her nest low down in the shaft, in order to have her broods secure from rapacious birds; and particularly from Owls, which are frequently found to fall down chimneys, probably in their attempts to get at the nestlings.

Professor Kalm, in his Travels in America, says, that a very reputable lady and her children related to him the following story respecting these birds, assuring him at the same time that they were all eye-witnesses to the fact:—"A couple of Swallows built their nest in the stable belonging to the lady; and the female laid eggs in the nest, and was about to brood them. Some days afterwards the people saw the female still sitting on the eggs: but the male flying about the nest, and sometimes settling on a nail, was heard to utter a very plaintive note, which betrayed his uneasiness. On a nearer examination, the female was found dead in the nest; and the people flung her body away. The male then went to sit upon the eggs; but after being about two hours on them, and perhaps finding the business too troublesome, he went out, and returned in the afternoon with another female, which sat upon the nest, and afterwards fed the young-ones, till they were able to provide for themselves."

At Camerton Hall, near Bath, a pair of Swallows built their nest on the upper part of the frame of an old picture over the chimney-piece; entering through a broken pane in the window of the room. They came three years successively; and in all probability would have continued to do so, had not the room been put in repair, which prevented their access to it.

Another pair were known to build for two successive years on the handles of a pair of garden shears, that were stuck up against the boards in an out-house; and therefore must have had their nest spoiled whenever the implement was wanted. And what is still more strange, a bird of the same species built its nest on the wings and body of an Owl, that happened to hang dead and dry from the rafter of a barn and so loose as to be moved by every gust of wind. This Owl, with the nest on its wings, and with eggs in the nest, was taken as a curiosity to the museum of Sir Ashton Lever. That gentleman, struck with the singularity of the sight, furnished the person who brought it with a large shell, desiring him to fix it just where the Owl had hung. The man did so; and in the following year a pair of Swallows, probably the same, built their nest in the shell, and laid eggs.

"By the myriads of insects, which every single brood of Swallows destroy, in the course of a summer, these birds defend us in a great

measure from the personal and domestic annoyance of flies and gnats, and what is of infinitely more consequence, they keep down the numbers of our minute enemies, which, either in the grub or winged state, would otherwise prey on the labors of the husbandman. Since, then, Swallows are guardians of our corn, they should every where be protected by the same popular veneration which in Egypt defends the Ibis, and in Holland the Stork. We more frequently hear of unproductive harvests on the Continent than in England; and it is well known that Swallows are caught and sold as food, in the markets of Spain, France, and Italy. When this practice has been very general and successful, I have little doubt that it has, at times, contributed to a scarcity of corn. In England they are not driven to such resources to furnish their tables. But what apology can be made for those, and many there are, whose education should have taught them more innocent amusements, but who wantonly murder Swallows, under the idle pretence of improving their skill in shooting game? Besides the cruelty of starving whole nests by killing the dam, they who follow this barbarous diversion would do well to reflect, that by every Swallow they kill, they assist the effects of blasts, mildews, and vermin, in causing a scarcity of bread.

All the birds of this tribe have been observed to drink as they fly along, sipping the surface of the water; but the Swallow alone, in general, washes on the wing, by dropping into a pond many times successively. In very hot weather, House-Martins and Bank-Martins, also sometimes dip and wash.

Swallows feed on small Beetles, as well as on Gnats and Flies; and often settle on dug ground or paths, for gravel, which assists in grinding and digesting their food. Horsemen, on wide downs, are often closely attended, for miles together, by a small party of Swallows; which play before and behind them, sweeping around, and collecting all the insects that are roused by the trampling of the horse's feet. When the wind blows hard, the birds, without this expedient, are often forced to alight, in order to pick up their lurking prey.

Mr. White informs us, that for some weeks before the Swallows depart, they (without exceptions) forsake houses and chimneys, and roost in trees; and that they usually withdraw about the beginning of October, though some few stragglers may be seen at times till the first week in November. A few days previously to their departure, they assemble in vast flocks on house-tops, churches, and trees, from which they take their flight.

I shall conclude the account of this bird with an anecdote related by M. de Buffon. This celebrated writer informs us, that a shoemaker in Basle put a collar on a Swallow, containing an inscription to this purport:

"Pretty Swallow, tell me, whither goest thou in winter?"

and in the ensuing spring he received, by the same courier, the following answer:

"To Anthony at Athens:—Why dost thou inquire?"

The most probable conjecture on this story is, that the answer was written by some one who had caught the bird in Switzerland; for both Belon and Aristotle assure us, that though the Swallows live half the year in Greece, yet they always pass the winter in Africa.

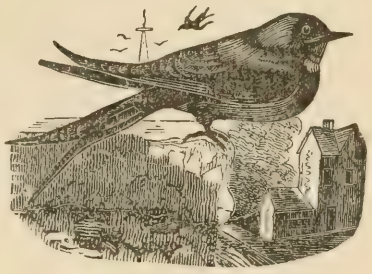
The Rev. Revett Shepperd, F. L. S., a few years ago communicated to me the following acount of a Swallow which was domesticated by Miss Boldero of Ixworth, near Bury St. Edmunds: "On the 19th of July, 1806, three young Swallows fell down the chimney of this lady's bed-chamber, and, being fond of birds, she determined, if possible, to rear them. Two of them died in the course of a week, but the third, by feeding it with boiled egg, mixed occasionally with bread, she succeeded in rearing. It grew fast, and continued in excellent health. As flies were its most natural food, she supplied it with these as frequently as possible. It drank plentifully of water, and seemed to derive great pleasure from regularly washing itself. This bird grew so tame that it would come to its mistress whenever she held out her finger for it to alight upon; and thus perched, would catch every fly within its reach. Its eagerness in this act, and its manner of catching these insects, the snap of its beak in so doing, and its general docility, rendered it a very amusing and interesting object. Frequently after dinner, Miss Boldero would bring it upon her finger into the dining-room, a large and lofty apartment. Here it would fly about with great freedom; and, when tired, would come to its mistress to rest itself upon her. It did not appear to notice a small Parrot, which was loose in the same room, and upon the perches of whose stand it was fond of alighting. If, however, the Parrot attempted to attack it, the Swallow always opened its beak in a threatening manner, as if resolved to defend itself from insult.

"When the usual term for the migration of its tribe approached this bird became uneasy; and, as it was occasionally hung in a cage on the outside of the house, the other Swallows came about it, and appeared to invite it to go with them. The Swallows, so long as any remained, came every day to it; and when they had all disappeared it became tolerably tranquil. Miss Boldero was extremely anxious to preserve it through the winter, and though aware of the difficulty she should have in feeding it through that season, resolved to make the attempt. On the 9th of October, however, after she had fed it as usual, and had left it in apparent health and vigor, she had the mortification, on returning to her chamber, to find it dead. The cause of its death she was unable to ascertain; but she imagined that the bird might have been inadvertently struck by the servant, whilst she was cleaning the room."

THE MARTIN.

About the 16th of April these birds begin to appear, and generally for some time they pay no attention to the business of nidification, but play and sport about, either to recruit themselves from the fatigue of their journey, or else that their blood may recover its true tone

and texture, after having been so long benumbed by the severities of the winter. Towards the middle of May, if the weather be fine, the Martin begins to think of providing a mansion for its family. The crust or shell of its nest seems to be formed of such dirt or loam as is most readily met with; and it is tempered and wrought together with little pieces of broken straws, to render it tough and tenacious.



THE MARTIN.

As this bird often builds against a perpendicular wall, without any projecting ledge under, its utmost efforts are necessary to get the first foundation firmly fixed, so as to carry safely the superstructure. On this occasion the bird not only clings with its claws, but partly supports itself by strongly inclining its tail against the wall, making that a fulcrum; and, thus fixed, it plasters the materials into the face of the brick or stone. But that this work may not, while soft, incline down by its own weight, the provident architect has the prudence and forbearance not to proceed too fast; but, by building only in the morning, and dedicating the rest of the day to food and amusement, she gives it sufficient time to dry and harden. About half an inch seems to be a sufficient layer for a day. Thus, careful workmen, when they build mud-walls, (informed at first, perhaps, by this little bird,) add but a moderate layer at a time, and then desist, lest the work should become top-heavy, and so be ruined by its own weight. By this method, in about ten or twelve days, a hemispherical nest is formed, with a small aperture towards the top; strong, compact, and warm, and perfectly fitted for all the purposes for which it was intended. But nothing is more common than for the House-Sparrow, as soon as the shell is finished, to seize on it, eject the owner, and to line it according to its own peculiar manner. After so much labor is bestowed in erecting a mansion, as Nature seldom works in vain, Martins will breed for several years successively in the same nest, where it happens to be well sheltered and secured from the injuries of the weather. The shell or crust of the nest is a sort of rustic work, full of knobs and protuberances on the outside: nor is the inside smoothed with any great exactness; but it is rendered soft and warm, and fit for incubation, by a lining of small straws, grasses, and feathers, and sometimes by a bed of moss interwoven with wool.

In this nest are produced four or five young ones; which, when arrived at full growth, become impatient of confinement, and sit all day with their heads out at the orifice, where the dams, by clinging to the nest, supply them with food from morning to night. After this they are fed on wing by the parents; but this feat is performed by so quick and almost imperceptible a flight, that a person must attend very exactly to the motions of the birds, before he is able to perceive it.

As soon as the young-ones are able to provide for themselves, the dams repair their nest for a second brood. The first flight then associate in vast flocks; and may be seen on sunny mornings and evenings, clustering and hovering around towers and steeples, and on the roofs of churches and houses. These congregations usually begin to take place about the first week in August. From observing the birds approaching and playing about the eaves of buildings, many persons have been led to suppose that more than two old birds attend n each nest

The Martins are often very capricious in fixing on a nesting-place, beginning many edifices and leaving them unfinished; but (as we have before observed) when a nest has once been completed in a sheltered situation, it is made to serve for several seasons. In forming their nests, these industrious artificers are at their labor, in the long days, before four o'clock in the morning: in fixing their materials they plaster them on with their chins, moving the head with a quick vibratory motion.

Sometimes, in very hot weather, they dip and wash themselves as they fly, but not so frequently as the Swallows. They are the least agile of all the British hirundines; their wings and tails are short, and therefore they are not capable of those surprising turns, and quick and glancing evolutions, that are so observable in the Chimney-Swallows.

Their motion is placid and easy: generally in the middle region of the air; for they seldom mount to any great height, and never sweep long together over the surface of the ground or water. They do not wander far in quest of food; but are fond of sheltered places near some lake, or under some hanging wood, especially in windy weather.

During the residence of a Mr. Simpson, at Welton in North America, he one morning heard a noise from a couple of Martins that were flying from tree to tree near his dwelling. They made several attempts to get into a box or cage which was fixed against the house, and which they had before occupied; but they always appeared to fly from it again with the utmost dread, at the same time repeating those loud cries which first drew his attention. Curiosity led this gentleman to watch their motions. After some time, a small Wren came from the box, and perched on a tree near it; when her shrill notes seemed to amaze her antagonists. Having remained a short time, she flew away. The Martins took this opportunity of returning to the cage; but their stay was short. Their diminutive adversary entered and made them retire with the greatest precipitation. They continued manœuvring in this way, during the whole day, but on the following morning, when the Wren quitted the cage, the Martins immediately returned, took possession of their mansion, broke up their own nest, went to work afresh with extreme industry and ingenuity, and soon barricaded their doors. The Wren returned, but could not now re-enter. She made attempts to storm the nest, but did not succeed. The Martins abstaining from food nearly two days, persevered during the whole of that time in defence

ing the entrance; and the Wren, finding she could not force the works, raised the siege, quitted her intentions, and left the Martins in quiet possession of their dwelling.

THE SAND-MARTIN.

In the banks of rivers, and in the perpendicular sides of sand-pits, these birds dig round and regular holes, about two feet in depth, which run horizontally, and in a somewhat serpentine direction. At the further end of these burrows, the birds construct their rude nest of grass and feathers. 'Though one would at first be disinclined to believe (says Mr. White) that this weak bird, with her soft tender bill and claws, should ever be able to bore the stubborn sand-bank without entirely disabling herself; yet with these feeble instruments have I seen a pair of them make great dispatch; and could remark how much they had scooped in a day, by the fresh sand which ran down the bank, and which was of a different color from what lay loose and had been bleached in the sun. In what space of time the little artists are able to mine and finish these cavities, I have never been able to discover; but it would be a matter worthy of observation, where it falls in the way of any naturalist to make such remarks. This I have often taken notice of, that several holes of different depths are left unfinished at the end of the summer. To imagine that these beginnings were intentionally made, in order to be in the greater forwardness for the ensuing spring, is allowing perhaps too much foresight to a simple bird. May not the cause of their being left unfinished, arise from the birds meeting, in those places, with strata too harsh, hard, and solid, for their purpose; which they relinquish, and go to a fresh spot, where they can work more freely? Or may they not in other places fall in with a soil as much too loose and mouldering liable to founder, and threatening to overwhelm them and their labors? One thing is remarkable; that, after some years, the old holes are forsaken, and new ones are bored; perhaps because the former habitations were become foul and fetid from long use, or because they so abounded with fleas as to become untenable." Sand Martins are so strangely annoyed with fleas, that these vermin have been sometimes seen swarming at the mouths of their holes, like bees on the stools of their hives.



THE SAND MARTIN.

The Sand Martin appears in this country about the same time as the Swallow, and lays from four to six white and semi-transparent eggs. These birds seem not to be of very sociable disposition: with us they never congregate in the autumn. They have a peculiar manner of flying: they flirt about with odd jerks and vacillations, not unlike the motions of a Butterfly.

THE ESCULENT SWALLOW.

The Esculent Swallow is somewhat smaller than the Wren. Its bill is thick. The upper parts of the body are brown, and the under parts whitish. The tail is forked; and each feather is tipped with white. The legs are brown.

The nest of this bird is exceedingly curious, and is composed of such materials, that it is not only edible, but is accounted by the epicures of Asia, among their greatest dainties. It generally weighs about half an ounce; and is, in shape, like a half-lemon, or, as some say, like a saucer with one side flatted, which adheres to the rock. The texture somewhat resembles isinglass, or fine gum-dragon: and the several layers of the component matter are very apparent; it being fabricated from repeated parcels of a soft, slimy substance, in the same manner as the Martins form their nests of mud. Authors differ much as to the materials of which this nest is composed: some suppose it to consist of sea-worms, of the *Mollusca* class; others from the sea-qualm, (a kind of Cuttle-fish,) or a glutinous sea-plant, called *agal-agal*. It has also been supposed that the Swallows rob other birds of their eggs, and, after breaking their shells, apply the white of them in the composition of these structures.

The best sort of nests, which are perfectly free from dirt are dissolved in broth, in order to thicken it; and are said to give it an exquisite flavor. Or they are soaked in water, to soften them; then pulled to pieces; and, after being mixed with *ginseng*, are put into the body of a fowl. The whole is afterwards stewed in a pot, with a sufficient quantity of water, and left on the coals all night. On the following morning it is in a state to be eaten.

These nests are found in vast numbers in certain caverns of islands in the Soolo Archipelago. The best kind sell in China at from one thousand to fifteen hundred dollars the *picle*; (about twenty-five pounds;) the black and dirty ones for only twenty dollars. It is said that the Dutch alone export from Batavia one thousand *picles* of these nests every year: they are brought from the islands of Cochin-China and those lying east of them.

The following is the account given of the nests of the Esculent Swallow by Sir George Staunton: "In the Cass (a small island near Sumatra) were found two caverns, running horizontally into the side of the rock; and in these were a number of those bird-nests so much prized by the Chinese epicures. They seem to be composed of fine filaments, cemented together by a transparent viscous matter, not unlike what is left by the foam of the sea upon stones alternately covered by the tide, or those gelatinous animal substances that are found floating on every coast. The nests adhere to each other, and to the sides of the cavern; mostly in rows, without any break or interruption. The birds that build these nests are small gray Swallows, with bellies of a dirty white color. They were flying about in considerable numbers; but were so small, and their flight was so quick, that they escaped the

shot fired at them. The same sort of nests are said also to be found in deep caverns at the foot of the highest mountains in the middle of Java, and at a great distance from the sea. The Esculent Swallows feed on insects which they find hovering over stagnated pools between the mountains, and for the catching of which their wide-opening beaks are particularly adapted. They prepare their nests from the best remnants of their food. Their greatest enemy is the Kite, which often intercepts them in their passage to and from the caverns. The nests are placed in horizontal rows, at different depths, from fifty to five hundred feet. The color and value of the nests depend on the quantity and quality of the insects caught; and, perhaps, also on the situation in which they are built. Their value is chiefly ascertained by the uniform fineness and delicacy of their texture; those that are white and transparent being most esteemed, and often fetching, in China, their weight in silver.

"These nests are a considerable object of traffic among the Javanese; many of whom are employed in it from their infancy. The birds, after having spent nearly two months in preparing their nests, lay each two eggs, which are hatched in about fifteen days. When the young birds become fledged, is the proper time to take the nests; and this is regularly done three times a year, and is effected by means of ladders of bamboo and reeds, by which the people descend into the caverns: but when these are very deep, rope-ladders are preferred. This operation is attended with much danger. The inhabitants of the mountains, who obtain a livelihood by collecting the nests, always begin by sacrificing a buffalo. They also pronounce certain prayers, anoint themselves with sweet-scented oil, and smoke the entrance of the cavern with gum-benjamin. Near some of the caverns a tutelar goddess is worshipped, whose priest burns incense, and lays his protecting hands on every person preparing to descend. A flambeau is, at the same time, carefully prepared, with a gum which exudes from a tree growing in the vicinity, and which is not easily extinguished by fixed air or subterraneous vapors."

THE BLACK MARTIN, OR SWIFT.

The legs of the Swift are so short, that the actions of walking and rising from the ground seem very difficult to it. Providence, however, has made the bird ample compensation, by furnishing it with means, in a peculiarly great extent of wing, for an easy and long-continued flight. It passes more of its time on wing than any other Swallow, and its flight is more rapid. It breeds under the eaves of houses, in steeples, and other lofty buildings; and makes its nest of grass and feathers.

The feet of this bird are of a peculiar structure, all the toes standing forward. The least toes consist of only one bone; the others of two each; in which they differ from the toes of all other birds. This, however, is a construction nicely adapted to the purposes for which the feet of these birds are employed.

The Swift visits England the latest, and leaves the earliest, of any bird of its tribe: it does not often arrive before the begining of May, and seldom remains later than the middle of August.

It is the most active of all birds; being on wing, in the height of summer, at least sixteen hours in the day; withdrawing to rest, in the longest days, about a quarter before nine in the evening, some time after all the other day-birds are gone. Just before they retire, large groups of Swifts assemble high in the air, screaming, and shooting about with wonderful rapidity. They are chiefly alert in sultry, lowering weather; when they express great alacrity, and seem to call forth all their powers.

In hot mornings, the Swifts collect together, in little parties, and dash around the steeples and churches, squeaking at the same time in a very clamorous manner. These are supposed to be the males serenading the sitting hens; as they seldom make this noise till they come close to the walls or eaves, and those within always utter in return a faint note of complacency. When the hen has been occupied all the day in sitting, she rushes forth, just before it is dark, to relieve her weary limbs. She snatches a scanty meal for a few minutes, and then returns to her task of incubation.

Swifts, when shot while they have young-ones, are found to have a little cluster of insects in their mouths, which they pouch and hold under their tongue. In general, they fly and feed higher in the air than any other species. They also range to vast distances; for motion is but a slight labor to them, endowed as they are with such wonderful powers of wing. Sometimes, however, in the summer they may be observed, for many successive hours, hawking very low, over pools and streams, in search of the Cadew-flies, May-flies, and Dragon flies, which frequent the banks and surface of waters, and which afford them a plentiful nourishment. Sometimes they pursue and strike at birds of prey when they are sailing about in the air; but they do not express so much vehemence and fury on these occasions as the Swallows.

Swifts breed but once in the summer and produce no more than two young-ones at a time.

The main body of these birds retire from this country before the middle of August, generally by the 10th, (which is but a short time after the flight of their young-ones,) and not a single straggler is to be seen on the 20th. This early retreat is totally unaccountable, as that time is often the most delightful in the year. But, what is yet more extraordinary, they begin to retire still earlier in the most southerly parts of Andalusia; where they cannot be influenced by any defect of heat, or even (as one would suppose) of food. This is one of those incidents in natural history, which not only baffle our researches, but also elude our conjectures.

The voice of the Swift is a harsh scream; yet there are few ears to which it is not pleasing, from an agreeable association of ideas, since it is never heard but in the most lovely weather of summer. These birds never, unless by accident, settle on the ground, from the difficulty they have in walking, or rather (as it may be called) in crawling; but they have a strong grasp with their feet, by which they readily

cling to walls and other places that they frequent. Their bodies being flat, they can enter a very narrow crevice; and where they cannot pass on their bellies, they will turn up edgewise to push themselves through.

THE TROGON.

The magnificent family of the Trogons stands pre-eminent in beauty and brilliancy of plumage, the usual tint being a metallic golden green, boldly contrasted with scarlet, black and brown. The toes are placed two behind and two before, like those of the Woodpeckers.



RESPLENDENT TROGONS.

The Resplendent Trogon is the most gorgeous of all this gorgeous family. Its long and gracefully curved tail, nearly three feet long; the whole of the upper surface, and the throat, are a glowing green; the breast and under parts are bright crimson; the middle feathers of the tail black, and the outer feathers white. This splendid bird is an inhabitant of Mexico, and was used by the Mexican nobles as an ornament to their head-dress.

From the feathers of these and other Trogons the mosaic pictures of the Mexicans were made. One of these, most delicately and beautifully executed, containing many figures, is now in the Ashmolean Museum at Oxford, and is there said to be made of Humming-birds' feathers. The subject is "Christ fainting under the cross." The whole picture is about the size of the palm of the hand, and the figures are barely half an inch in height.

This is a very difficult bird to stuff, on account of the delicate texture of the skin, which is so fragile, that it tears almost as easily as wet blotting paper.

THE HOOPOE.

One of the most elegant birds that visit England is unfortunately a very rare guest, and seldom if ever, breeds there. Its beautiful crest can be raised or depressed at pleasure, but is seldom displayed unless the bird is excited from some cause. Its food consists of insects, which

it first batters and moulds into an oblong mass, and then swallows with a peculiar jerk of the head. In Yarrell's British Birds, there is a very interesting account of a tame Hoopoe in the possession of Mr. Bartlett.

In France Hoopoes are very common, and may be seen examining old and rotten stumps for the insects that invariably congregate in such places. There they may be seen in flocks, but they never seem to go over to England in greater numbers than one pair at a time. M. Bechstein gives a curious account of the attitude assumed by the Hoopoe on perceiving a large bird in the air. "As soon as they perceived a Raven or even a Pigeon, they were on their bellies in the twinkling of an eye, their wings stretched out by the side of the head so that the large quill feathers touched the head, leaning on the back with the bill pointing upwards. In this curious posture they might be taken for an old rag!"



HOOPOE

These birds of which he is speaking are two young Hoopoes whom he had taken from the nest and was rearing. They lived for some time, but both died of civilization. The female had a habit of dragging her food about the floor, so that it became covered with rubbish.



HOOPOE.

This formed a hard mass nearly the size of an ordinary nut in the bird's stomach, something like the balls of hair found in the stomach of a cow, and soon killed the poor Hoopoe. The male bird lived through the winter, but becoming attached to the warmth of the stove, its beak became so unnaturally dry, that the two mandibles separated from each other and curved outwards, having an interval of nearly an inch between their tips. The bird of course soon died of absolute starvation.

The Hoopoe lays from four to seven grey eggs in the hollow of a tree. Its length is one foot.

THE LYRE BIRD.

This bird, called by naturalists the *Minura Superbas*, is found in New South Wales, where it lives in the thickets on the coasts, and on the mountains in the interior. It is shy and difficult of access. Its chief beauty is in the plumage of its tail, which is very elegant, assuming the



LYRE BIRDS.—MALE AND FEMALE.

form of an ancient Lyre. The tail is composed of three different sorts of feathers, of which the upper side is a dark grey. The tail of the female is simply brown, and composed of long, uniform feathers, which are straight and graduated. The tail feathers are detached entire from the bird, and are sold in the stores at quite fancy prices.

OF THE PIGEON TRIBE IN GENERAL.

These birds have a weak slender bill, straight at the base; with a soft protuberance, in which the nostrils are situated. The legs are short, and in most of the species red; and the toes are divided to the origin.

The Pigeons constitute a tribe that forms a connecting link between the passerine birds and the poultry. They are much dispersed over the world, some of the species being found even in the arctic regions.



PIGEONS.

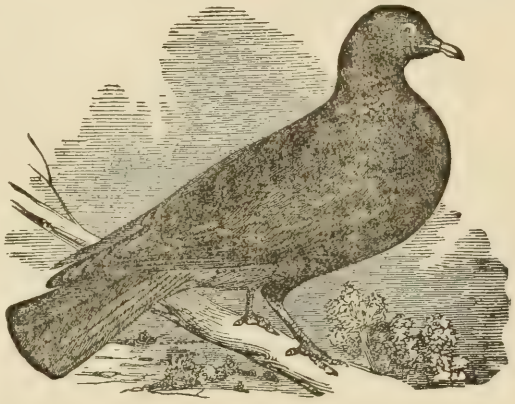
Their principal food is grain: they drink much: and not at intervals like other birds, but by a continued draught, like quadrupeds. During the breeding-time they associate in pairs, and pay court to each other with their bills. The female lays two eggs, and the young-ones are, for the most part, a male and a female. They usually breed more than once in the year; and the parent birds divide the labor of incubation by sitting alternately on the eggs.

Both the male and female assist in feeding their offspring. This, in most of the species with which we are acquainted, is done by means of a substance secreted in the crop, which in appearance is not unlike curd, and is analogous to milk in quadrupeds. During incubation, the coat of the crop is gradually enlarged and thickened, like what happens to the udders of female quadrupeds during the time of uterine gestation. On comparing the state of the crop when the bird is not sitting, with its appearance on these ocasions, the difference is found to be very remarkable. In the first case it is thin and membranous; but when the young-ones are about to be hatched, it becomes thicker, and takes a glandular appearance, having its internal surface very irregular. Whatever may be the consistence of this substance when just secreted, it probably very soon coagulates into a granulated white curd; and in this form it is always found in the crop. If an old Pigeon be killed just when the young-ones are hatching, the crop will be found as above described, having in its cavity pieces of white curd mixed with the common food of the bird, such as barley, peas, or grain. The young Pigeons are fed for a little while with this substance only:

about the third day some of the common food is to be found along with it. As the Pigeons grow older, the proportion of common food is increased; so that by the time they are seven, eight, or nine days old, the secretion of the curd ceases in the old ones, and of course no more is found in the crop of the young. It is a curious fact, that the parent Pigeon has, at first, power to throw up this curd without any mixture of common food; although, afterwards, both are thrown up, in the proportion required for the young-ones.

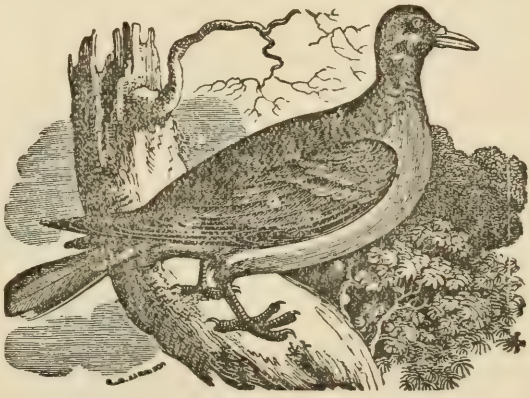
THE WILD PIGEON, OR STOCK-DOVE.

THIS bird is of a bluish ash-color: the breast is dashed with a fine changeable green and purple; and the sides of the neck are of a shining copper-color. Its wings are marked with two black-bars; one on the coverts, and the other on the quill feathers. The back is white, and the tail barred near the end with black. The usual weight is about fourteen ounces.



STOCK-DOVE.

Multitudes of Wild Pigeons visit this country in the winter, from their more northerly summer retreats. They appear about November, and again retire (except a few that breed with us) in the spring. While the beech woods were suffered to cover large tracts of ground, these birds used to haunt them in myriads, frequently extending above a mile in length, as they went out in a morning to feed. They are, however, still found in considerable quantity, forming their nests in holes of rock, and old towers, and in the hollows of trees; but never, like the Ring-dove, on the boughs.



WILD PIGEON.

In a state of domestication, these Pigeons are known to breed eight or nine times in the

year; and though only two eggs are laid at a time, their increase is so rapid and prodigious, that, at the expiration of four years, the produce, and descendants, of a single pair, may amount to the immense number of nearly fifteen thousand.

The usual way to entice Pigeons to remain at a required spot, is to place what is called a *salt-cat* near them. This is composed of loam, old rubbish, and salt, and will so effectually answer the purpose as to decoy even those which belong to other places.

We have a singular anecdote of the effect of music on a Pigeon, related by John Lockman, in some reflections concerning operas, prefixed to his musical drama of Rosalinda. This person being at the house of Mr. Lee, a gentleman who lived in Cheshire, and whose daughter was a fine performer on the harpsichord, he observed a Pigeon, which, whenever the young lady played the song of "Speri si" in Handel's opera of Admetus, (and this only,) would descend from an adjacent Dovehouse to the room-window where she sat, and listen to it apparently with the most pleasing emotions; and when the song was finished, it always returned immediately to the Dove-house.



WILD PIGEON.

CARRIER PIGEON.

There are upwards of twenty varieties of the Domestic Pigeon; and of these the *Carriers* are the most celebrated. They obtained their name from their being sometimes employed to convey letters and small packets from one place to another.



CARRIER PIGEON.

It is through attachment to their native place, and particulaaly to the spot where they have brought up their young-ones, that they are thus rendered useful to mankind. The bird is conveyed from its home to the place whence the information is intended to be sent; the letter is tied under its wing, and it is let loose. From the instant of its liberation its flight is directed through the clouds, at an amazing height, to its home. By an instinct altogether inconceivable, it darts onward, in a straight line, to the very spot whence it was taken; but how it can direct its flight so exactly, will probably for ever remain unknown to us.



BALD PATE.

The rapidity of their flight is very wonderful. Lithgow assures us that one of them will carry a letter from Babylon to Aleppo (which, to a man, is usually thirty days' journey) in forty-eight hours. To measure their speed with some degree of exactness, a gentleman some years ago, on a

trifling wager, sent a Carrier Pigeon from London, by the coach, to a friend at Bury St. Edmund's; and along with it a note, desiring that the Pigeon, two days after its arrival there, might be thrown up precisely when the town clock struck nine in the morning. This was accordingly done; and the Pigeon arrived in London, and flew into the Bull-inn, in Bishopsgate-street, at half-past eleven o'clock of the same morning, having flown seventy-two miles in two hours and a half.



POUTER.

The Carrier Pigeon is easily distinguished from the other varieties, by a broad circle of naked white skin round the eyes, and by its dark blue or blackish color.

THE RING-DOVE.

The Ring-dove is the largest Pigeon which is found in England, and may at once be distinguished from all others by its size. Its weight is about twenty ounces; its length eighteen inches, and its breadth about thirty. The head, back, and coverts of the wings are of a bluish ash-color. The lower side of the neck and breast is of a purplish red, dashed with ash-color. On the hind part of the neck there is a semi-circular line of white; above and beneath that the feathers are glossy, and of changeable colors when opposed to the light. The belly is of a dirty white. The greater quill-feathers are dusky; the rest ash-colored. Underneath the bastard-wing there is a white stroke pointing downward.



RING-DOVE.

These Pigeons build their nests on the branches of trees, and generally prefer those of the pine. The nest is large and open, formed principally of dried sticks; and the eggs, which may frequently be seen through the bottom of the nest, are larger than those of the Domestic Pigeon.

The food of this, as well as of the other species, is principally grain; but a neighbor of the Rev. Mr. White, of Selborne, shot a Ring-dove, as it was going to roost; and when his wife had picked

and drawn it, she found its craw stuffed with a collection of the tender tops of turnips. Hence we may see that granivorous birds, when their usual kinds of subsistence fail, can feed on the leaves of vegetables. There is indeed reason to suppose that they would not long be healthy without these substances; for Turkeys, though corn-fed, delight in a great variety of plants, such as cabbage, lettuce, and endive; poultry pick much grass; and Geese live for months together on commons, by grazing only.



RING-DOVE.

Attempts have frequently been made to domesticate these birds, by hatching their eggs in dove-houses, under the common Pigeon; but as soon as the young-ones were able to fly, they always escaped to their proper haunts. Mr. Montagu was at considerable pains in experiments of this nature; and though he so far tamed them within doors as to have them become exceedingly troublesome, yet he never could produce a breed, either by themselves or with the tame Pigeon. Two that were brought up with a male Pigeon, were rendered so tame that they would eat out of the hand; but as they showed no signs of breeding in the spring, they were suffered to fly away, by the window of the room in which they were confined being left open. It was supposed that, the Pigeon might induce them to return to their usual place of abode, either for food or to roost; but from that moment they assumed their natural habits, and nothing more was seen of them, although the Pigeon remained. This gentleman bred up a curious assemblage of birds, which lived together in perfect amity: it consisted of a common Pigeon, a Ring-dove, a White-owl, and a Sparrow-hawk; and the Ring-dove was master of the whole.

THE CROWNED PIGEON.

This bird is about the size of a common Turkey. Its head is adorned with a most superb circular crest of feathers, standing erect and composed of loose, unconnected webs, of a fine bluish ash-color. The eyes are lodged in a shuttle-shaped band of black. The lesser coverts of the wings, and the upper part of the back, are of a dark reddish purple the first greater coverts are white, edged with red; and all the rest of the plumage is of the same color as the crest.

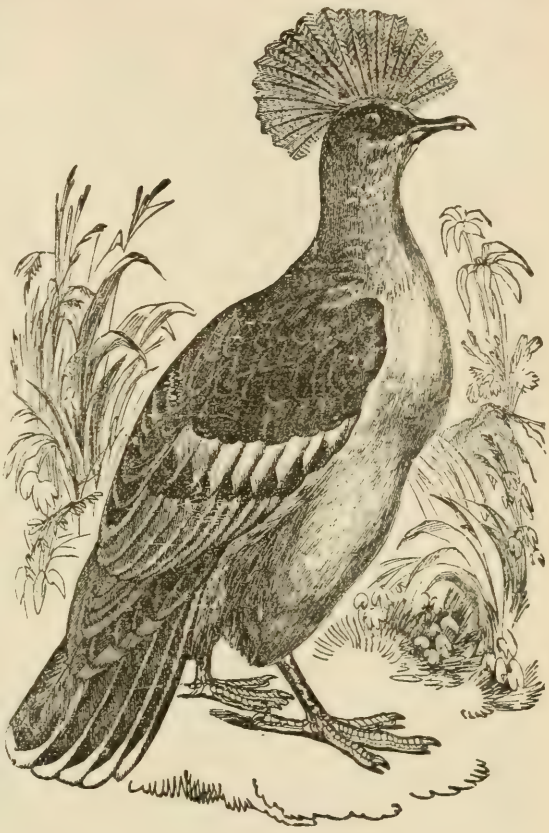


CROWNED PIGEON.

The wings of the Crowned Pigeon are armed each with a horny excrescence, with which they are able to strike a severe blow. These birds are easily rendered tame; and, in the East Indies, they are kept

in court-yards, with poultry. They have frequently been brought alive into Europe, where they are justly considered among the greatest ornaments of the menagerie: and one instance has occurred of a female laying eggs, but these were unproductive. In a wild state they breed in the highest trees.

These birds have all the habits of the common Pigeons; billing, inflating their breast, and cooing: the noise of their cooing is, however, so loud, as, at times, to resemble rather a bellowing. It is said that M. Bougainville's sailors were greatly alarmed at hearing this noise for the first time, in the wild and unfrequented spots of some of the islands on which they landed: they supposed it to proceed from the savage cries of hostile and concealed natives.



THE GREAT CROWNED PIGEON.

The Crowned Pigeons are found in New Guinea, Pulo, and a few of the adjacent islands.

THE VICTORIA CROWNED PIGEON.

The Victoria Crowned Pigeon, the second member of this group with which we are acquainted, is also principally of a slaty blue colour, but has a reddish brown under side; the wing stripes are bluish gray, and a broad line at the end of the tail whitish gray. In this bird the feathers that form the crest terminate in small fan-like appendages. The eye is reddish, and the foot flesh-pink. The pigeon is somewhat larger than the species last described. It inhabits the most southern parts of North Guinea, and is nowhere very numerous. "Their walk," says the Rev. J. G. Wood, "is quite of a royal character, stately, majestic, and well according with the crown they wear upon their heads. The crest seems always to be held expanded. They have the habit of

sunning themselves upon the hot pavement of their prison by lying on one side, laying the head flat on the ground, tucking the lower wing under, and spreading the other over their bodies, so as to form a very shallow tent, each quill-feather being separated from its neighbour and radiating around the body."



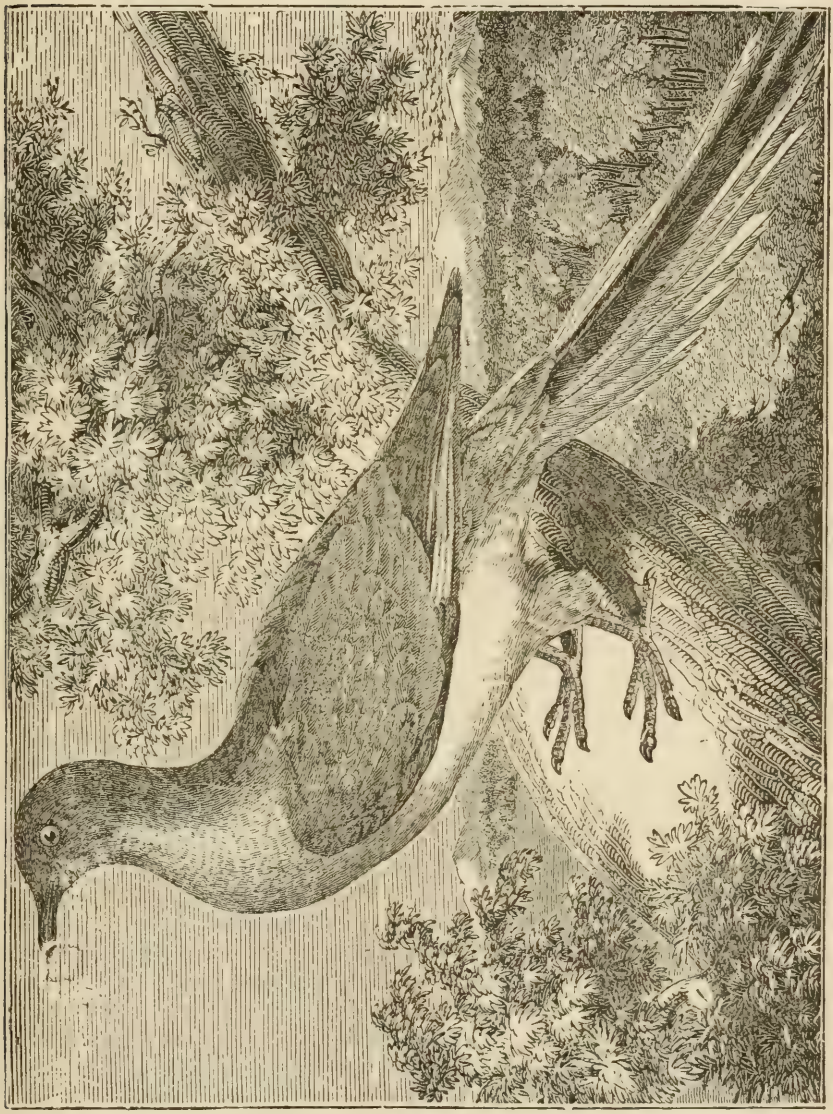
VICTORIA CROWNED PIGEON.

THE PASSENGER PIGEON.

This species is about the size of the common Pigeon. Its bill is black. Round the eyes there is a crimson mark; and the head, throat, and upper parts of the body, are ash-colored. The sides of the neck

are of a grossy, variable purple. The fore part of the neck and breast are vinaceous; and the under parts are of a similar color, but paler. The tail is tolerably long. The legs are red, and the claws black.

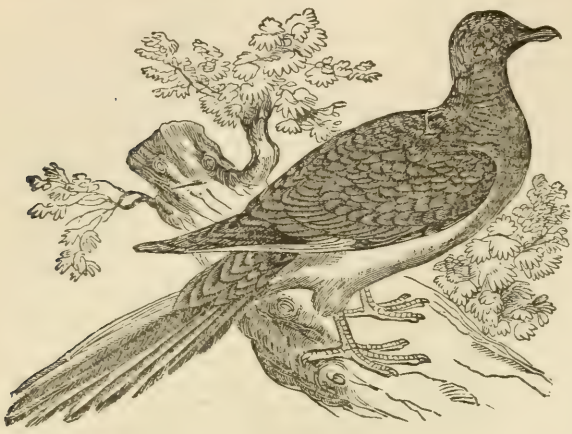
Passenger Pigeons visit in enormous flocks, the different parts of



PASSENGER PIGEON.

North America. In the southern provinces their numbers depend greatly on the mildness or severity of the season: for in very mild weather few or none of them are to be seen. Actuated by necessity, they change their situation in search of acorns, mast, and berries which

the warmer provinces yield in vast abundance. When they alight, the ground is quickly cleared of all esculent fruits; to the great injury of the Hog, and other mast-eating animals. After having devoured every thing that has fallen on the surface, they form themselves into a great perpendicular column, and fly around the boughs of trees, from top to bottom, beating down the acorns with their wings; and they then, in succession, alight on the ground, and again begin to eat.

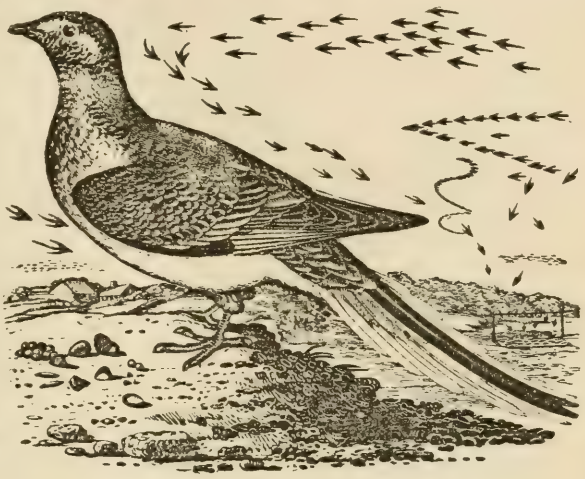


THE PASSENGER PIGEON.

"I think," says Mr. Blackburne, in a letter to Mr. Pennant, "that these are as remarkable birds as any in America. They are in vast numbers in all parts; and have, at times, been of great service to our garrisons, in supplying them with fresh meat, especially at the outposts. A friend told me, that in the year in which Quebec was taken, the whole army was supplied with this subsistence. The way was this. Every man took his club, (for they were forbidden to use their firelocks,) and the Pigeons flew in such numbers, that each person could kill as many as he wanted. They in general begin to fly soon after day-break, and continue till nine or ten o'clock; and again about three in the afternoon and continue till five or six; but what is very remarkable, their course is always westerly. The times of flying here are in the spring, about the latter end of February or the beginning of March, and they continue their flight every day for eight or ten days; and again in the fall, when they appear at the latter end of July or the beginning of August. The inhabitants catch vast numbers of them in clap-nets. I have seen them brought to the market at New York by sacksful. People in general are very fond of them, and I have heard many say that they think them as good as our common blue Pigeon: but I cannot agree in this opinion: the flesh tastes most like that of our Queest, or wild Pigeon, but it is better. Sir William Johnston told me, that at one shot, with a blunderbuss, he killed *above a hundred and twenty*. I must remark a singular fact: that notwithstanding the whole people of a town go out *a pigeoning*, as they call it, they do not on some days, kill a single hen bird; and on the very next day not a single cock; (and yet both sexes always fly westerly;) and when this is the case, the people are always assured that there will be a great quantity of them that season."

These Pigeons were so numerous when La Hontan was in Canada,

that, he says, the bishop had been compelled more than once formally to *exorcise* them, on account of the damage they committed. Many of the trees are said to have had more Pigeons on them than leaves; and for eighteen or twenty days, it was supposed that a sufficient number might have been killed to supply food for a thousand men.



PASSENGER PIGEONS.

Mr. Weld who some years ago travelled through the States of North America, informs us that a gentleman of the town of Niagara assured him, that once when he was embarking on board a vessel from Toronto a flight of Pigeons was observed coming from that quarter; that, as he sailed over the lake Ontario to Toronto, forty miles distant from Niagara, Pigeons were seen flying over-head, the whole way, in a direction contrary to that in which the vessel proceeded; and that, on his arriving at the place of his destination, the birds were still observed coming from the North, in as large bodies as had been noticed at any time during the voyage. Supposing, therefore, that the Pigeons moved no faster than the vessel, the flight, according to this gentleman's account, must have exceeded at least eighty miles.

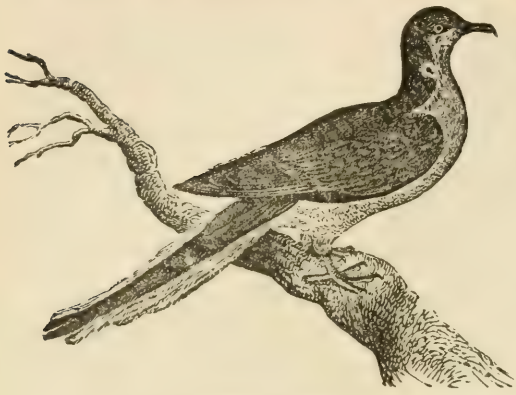
During their migrations, these Pigeons are very fat. It is a singular fact, that Mr. St. John found in the craw of one of them some undigested rice, when the nearest rice-fields were at least five hundred and sixty miles from his habitation. He naturally concluded that either they must fly with almost the celerity of the wind, or that digestion must be in a great measure suspended during their flight.



GROUP OF WILD PIGEONS.

The Indians often watch the roosting-places of these birds; and, knocking them on the head in the night, bring them away by thousands. They preserve the oil, or fat, which they use instead of butter.

By the Europeans they are generally caught in nets extended on the ground; to which they are allured by tame Pigeons of their own species, that are blinded, and fastened to a long string. The short flights and repeated calls of the shackled birds, never fail either to excite their curiosity, or bring some of them down to attempt their relief; when they are immediately enclosed. Every farmer has a tamed Pigeon in a cage at his door all the year round, to be ready against the season of their flight.

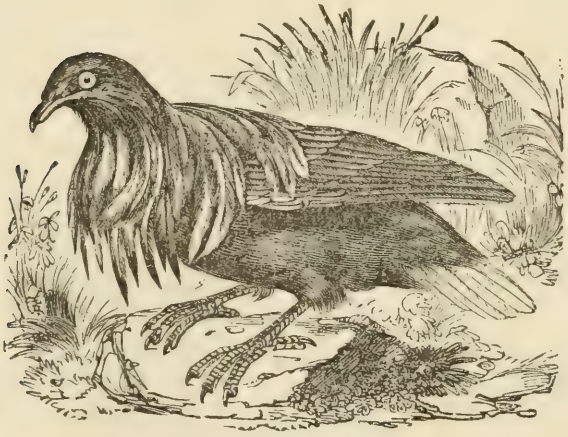


PASSENGER PIGEON.

M. du Pratz, when he was in America, placed under the roosting trees of these Pigeons, vessels filled with flaming sulphur, the fumes of which brought them to the ground in immense numbers.

THE NICOBAR PIGEON.

This splendid bird, is a native of Java, Nicobar, Sumatra, and many of the Moluccas. It is, as far as we have been enabled to determine, terrestrial in its habits. Its plumage is exceedingly refulgent; the head is of a dull slate color, with a tinge of purple: long flowing pointed feathers ornament the neck, like the hackles of the domestic cock, of a rich green with coppery reflections; the coverts of the wings are also pointed. The whole of the upper portion of the body is bronze with steel-blue reflections on glossy green; the under portion is similar, only less brilliant. The tail is pure white.



THE NICOBAR PIGEON

THE CHESTNUT-SHOULDERED PIGEON.

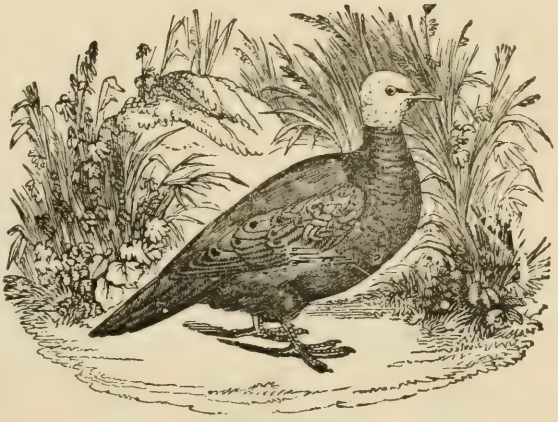
This magnificent bird is a native of New Zealand, and is very abundant in the woods near the Bay of Islands. Their flesh is excellent. All the upper parts and throat are of a changable hue, in which are mingled rosy-copper reflections running into brilliant iridescent tints; the quills are of a more sombre tone. The tail above is brown slightly tinged with greenish, below it is brown; breast and under parts white; bill and tarsi carmine; a bright red skin surrounds the eye. Length about nineteen inches.



THE CHESTNUT-SHOULDERED PIGEON.

THE TALPICOTI.

Brazil, Paraguay, and other portions of South America are the native countries of this little Pigeon. It is seldom if ever, seen in large flocks, but often in families of five or six, frequents the borders of woods, and sometimes ventures near farm yards. When captured it soon becomes reconciled, and breeds freely.



THE TALPICOTI.

THE BROWN-BACKED PERISTERA.



THE BROWN-BACKED PERISTERA.

This species is a native of Southern Africa, where it is said to frequent woods; but little appears to be known respecting it. The plumage above is brown, slightly tinged with grey on the neck; three or four of the greater wing-coverts have large spots of shining green; forehead, a streak over each eye, and all the under parts white; middle tail-feathers brown, the two exterior on each side grey, with a broad black bar; under surface of wings and sides pale orange-brown; under tail-coverts brown; bill and legs grey, the latter tinged with red; length nine inches.

THE OCEANIC FRUIT PIGEON.



THE OCEANIC FRUIT PIGEON.

The Oceanic Fruit Pigeon is fourteen inches in length, including the tail, which measures five; the bill, an inch long, is black, strong, and surmounted at its base by a rounded very black caruncle; the feet are very strong and of a bright orange color; the tarsi are feathered nearly down to the toes, which have a well developed border; the wings are pointed and only one inch shorter than the tail, which is almost rectilinear. The lower part of the belly, the vent, the thighs, and the lower tail-coverts, are a deep ferruginous red: the tail-feathers on the under side are a bright reddish-green.

THE MANASOPE PIGEON.

A most elegant bird, is found in the deep forests of New Guinea, and in the neighborhood of the harbor of Doréry. Its head, rump, upper part of the body, wings, and tail, of an agreeable grass green; a large hood of a beautiful indigo-blue covers the occiput; elongated blue spots occupy the centre of the subular feathers, which are bordered with a straight yellow line. The throat to half-way down the neck is ash grey; the breast is greyish-green.



THE MANASOPE.

THE WATTLED GROUND PIGEON.

The wattled ground Pigeon is a native of South Africa. Its nest is composed of twigs and the dried stems of grasses, placed in some slight hollow of the ground, and there the female lays six or eight reddish-white eggs, which are incubated by both the parents. The young, like those of the Partridge, almost immediately follow the parent, who broods over them, and gathers them beneath her wings. They walk and run with great rapidity; and roost on bushes or the lower branches of trees.



THE WATTLED GROUND PIGEON.

THE PHASIANELLA.



THE PHASIANELLA.

This beautiful species is found in Australia, Java, and the Phillipine and Moluccа islands. It is an inhabitant of the woods, and its food is said to consist of a kind of Pimento and of other aromatic berries, swallowed entire. The flesh is dark, but its flavor is stated to be excellent. Its length is from fourteen to sixteen inches, the tail being seven and rather more.

Their habits and mode of life are also nearly allied to the other arboreal species, being the constant inhabitants of the woods, and subsisting upon the fruits and berries of various trees and shrubs. M. Temminck, in his description of these species, says that it possesses a structure and form precisely similar to that of the *Columba migratoria* of North America. To this we cannot subscribe, seeing that its essential characters, as above described, are different, and that the only point of resemblance consists in the length of the tail. Indeed, so far removed do we think it from the American group, that we cannot consider it as its analogue in the Asiatic regions where it resides.

The prevaling color of these Pigeons is bluish-gray, of various intensities and shades, frequently embellished upon the neck with feathers having a metallic lustre and pecular form, and which exhibit various tints of color according to the light in which they are viewed. They are naturally birds of a wild and timid disposition (though one species has been partly reclaimed), and usually live congregated in extensive flocks, except during the season of reproduction, when they pair. Most of the species seek their food upon the ground.

They build in trees or holes of rocks, making a shallow nest of small twigs loosely put together. Their eggs are never more than two in number, their color a pure white; they are incubated alternately by both sexes, and are hatched after being sat upon from eighteen to twenty-one days. The young, upon exclusion, are thinly covered with down, which is rapidly succeeded by the proper feathers.

THE BRONZE-WINGED PIGEON.

This beautiful species is a native of Australia, and is common near Sidney from September till February. It is usually seen in pairs; and their voice is loud and sonorous. The nest is placed either in the hole of a mouldering tree or on a stump. The eggs are two and white. The wing-coverts are remarkable for a large ovate spot of metallic lustre, changing in different lights.



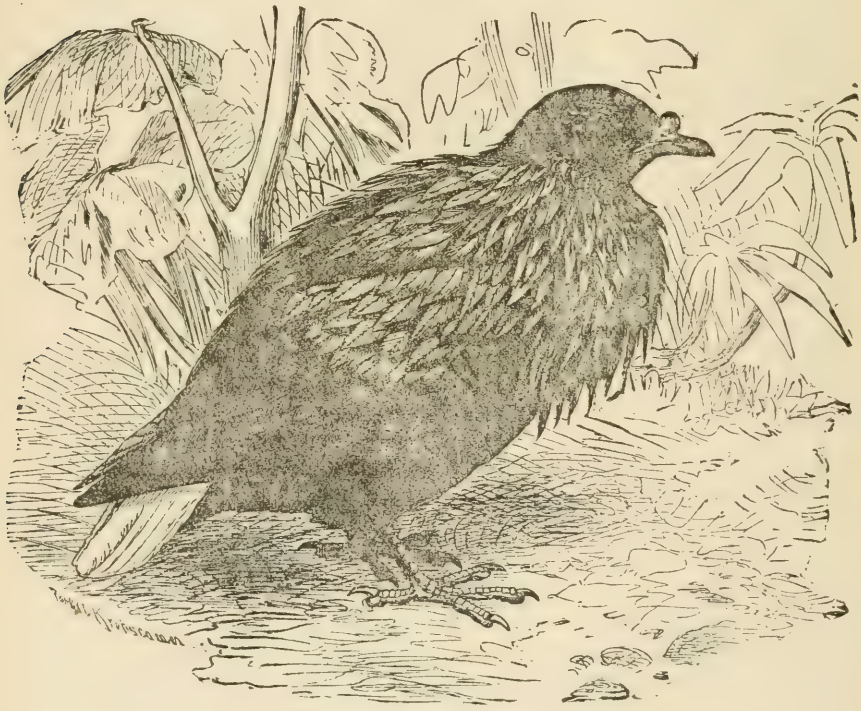
THE BRONZE-WINGED PIGEON.

It belongs to the species *Phaps*, which is characterized as follows by Mr. Selby. Bill moderately long, rather slender; upper mandible gently deflected at the tip, and with the indication of a notch or emargination. Wings of mean length; second and third feathers longest, and nearly equal. Tail slightly rounded. Legs, tarsi as long as the middle toe, the front covered with a double row of scales, sides and back reticulated with small hexagonal scales. Hind toe short; inner toe exceeding the outer in length. Claws blunt, slightly arched.

THE HACKLED GROUND PIGEON.

This is a powerfully-built bird, with a strong beak, furnished with a soft, conical excrescence at its base; the feet approximate the gallina-

ceous type, having stout tarsi and short toes; the long wings when closed extend almost to the tip of the rounded tail, which is composed of twelve broad feathers. The plumage is richly coloured, and so prolonged around the throat as to form a complete mane or collar. The head, throat, entire under side, and wings are blackish green, the feathers on the lower part of the body edged with blue; the longest of the collar feathers, back, rump, and feathers of wing covers are of grass-green, with a metallic lustre, the shorter collar-feathers being of a glossy, golden hue, and those of the tail a pure white. The eye is light reddish brown, the beak blackish, and the foot reddish purple. The length is fourteen inches, the breadth across the wings twenty-nine



HACKLED GROUND PIGEON.

inches; the wing measures nine inches and a half, and the tail two inches and two-thirds. This beautiful bird, according to Jerdon, is met with on the Andaman and Nicobar Islands, the Merqui Archipelago, the Philippines and Malaya generally, usually preferring to settle upon the small unoccupied islands. Though, like its congeners, it possesses considerable powers of flight, it seeks the grain and insects that afford it the means of sustenance almost exclusively on the ground, upon which it passes the entire day, only leaving its surface to seek a perch whereon to sleep.

THE ROCK-DOVE.

This species is spread over a great portion of Europe, Asia, and Northern Africa, abounding in the rocky islands of the Mediterranean and in the Orkneys. The Rock-dove is more slender than the Stock-dove, and is astonishingly rapid in flight. It may at once be distinguished from the latter by the white color of the lower part of the back, and the two distinct bands of leaden black across the wings. It is to the Rock-dove a species almost universally spread in its wild state throughout the Old World, that the domestic Pigeon and its varieties must be referred. All these varieties breed with each other, and with the wild Rock-dove; and without due care, all soon degenerate, as it is termed, and acquire the original form and coloring.



THE ROCK-DOVE.

"Under this species," writes Mr. Selby, "we include not only the common Pigeon, or inhabitant of the dove-cot, but all those numerous varieties, or, as they are frequently termed, races of domesticated Pigeons, so highly prized, and fostered with such care and attention by the amateur breeder or Pigeon fancier; for, however diversified their forms, color or peculiarity of habit may be, we consider them all as having originated from a few accidental varieties of the common Pigeon, and not from any cross of that bird with other species, no signs or marks whatever of such being apparent in any of the numerous varieties known to us. In fact, the greater part of them owe their existence to the interference and the art of man: for by separting from the parent stock such accidental varieties as have occasionally occurred, by subjecting these to captivity and domestication, and by assorting them and pairing them together, as fancy or caprice sugested, he has at intervals generated all the various races and peculiar varieties which, it is well known, when once produced, may be perpetuated for an indefinite perod, by being kept separate from, and unmixed with others; or what by those interested in such pursuits is usually termed 'breeding in and in.'"

THE DOUBLE-CRESTED PIGEON.

New Holland and Java are the native localities of this species. The head is ornamented with a frontal crest composed of long recurved lax feathers, advancing even on the bill, and of a bluish gray colour tinged with rufous; behind this, on the back of the head, is a second crest of rich rufous and composed of long decumbent feathers with open barbules and bounded by a black streak running back from each eye; bill rich orange; sides and front of the neck, together with the breast, pale gray, the base of the feathers being black; legs crimson.

THE AROMATIC VINAGO.

This bird is a native of India, Java, and the adjacent islands. It is of a mild and timorous disposition, and is generally seen in flocks or societies, except during the period of reproduction, when they pair, and retire to the recesses of the forest. The nest is simple and composed of a few twigs loosely put together, and the eggs are two. The base or softer part of the bill is a blackish grey, the tip yellowish white, strong, much hooked, and bulging on the side. The forehead is of a bright silken green, the crown greenish grey, the chin and throat gamboge-yellow, the remainder of the neck, the breast, belly, lower back and rump, yellowish green. The tail has the two middle feathers wholly green, and slightly exceeding the rest in length. In its habits it is arboreal.

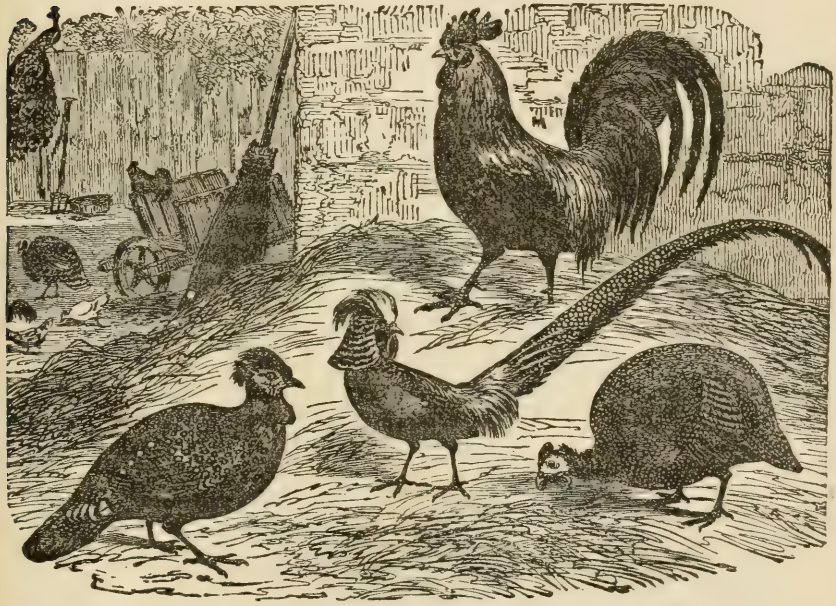


THE AROMATIC VINAGO.

Mr. Selby gives the following note which accompanied the skins of *Vinago militaris*, and *Vinago aromatica*. "Green Pigeon.—This beautiful bird has brilliant red eyes. Its feet are something like the Parrot's, and it climbs in the same way as that bird. It is very difficult to find; for although a flock is marked into a tree, yet its color is so similar to the leaf of the banyan (on the small red fig of which it feeds), that if a bird does not move you may look for many minutes before you can see one, although there may be fifty in the tree."

GALLINACEOUS BIRDS.

In the birds of this order, the bill is convex, the upper mandible lying in an arch over the lower one; and the nostrils are arched over with a cartilaginous membrane. The feet are formed for running, without a back toe; and the toes are rough underneath.



GALLINACEOUS BIRDS.

THE AMERICAN, OR COMMON TURKEY.

The hunting of these birds forms one of the principal diversions of the natives of Canada. When they have discovered the retreat of a flock of Turkeys, which in general is near fields of nettles, or where there is plenty of any kind of grain, they send a well-trained dog into the midst of the flock. The birds no sooner perceive their enemy, then they run off at full speed, and with such swiftness, that they leave the dog far behind. He, however, follows; and at last forces them to take shelter in a tree; where they sit, spent and fatigued, till the hunters come up, and with long poles knock them down one after another.

Turkeys were first introduced from North America into England in

the reign of Henry the Eighth. According to Tusser's "Five Hundred Pointes of good Husbandrie," they began about the year 1585 to form an article in our rural Christmas feasts:

> Beefe, mutton, and pork, shred pies of the best,
> Pig, veale, goose, and capon, and *turkie* well drest
> Cheese, apples, and nuts, jolly carols to heare,
> As then in the countrie is counted good cheare."

These birds, among themselves, are extremely furious; and yet against other animals they are generally weak and cowardly. The domestic cock often makes them keep at a distance; and they seldom venture to attack him but with united force, when the cock is rather oppressed by their weight than annoyed by their weapons. There have, however, occurred instances in which the Turkey-cock has not been found wanting in prowess:—A gentleman of New York received from a distance a Turkey-cock and hen, and a pair of Bantams, which he put into his yard with other poultry. Some time afterwards, as he was feeding them from the barn-door, a large hawk suddenly turned the corner of the barn, and made a pitch at the Bantam-hen. She immediately gave the alarm, by a noise which is natural to poultry on such occasions. On hearing this, the Turkey-cock, which was at a little distance, and no doubt understood the Hawk's intentions, and the imminent danger of his old acquaintance, flew at the tyrant with such violence, and gave him so severe a stroke with his spurs when about to seize his prey, as to knock him from the hen to a considerable distance; and the timely aid of this faithful auxiliary saved the bantam from being devoured.



COMMON TURKEY.



DOMESTIC TURKEY-COCK.

To this I can add another instance (though very different in its nature) of the gallantry of the Turkey-cock. In the month of May, 1798, a female Turkey, belonging to a gentleman in Sweden, was sitting upon eggs: and as the cock, in her absence, began to appear uneasy and dejected, he was put into the place with her. He immediately sat down by her side; and it was soon found that he had taken some eggs from under her, and had

himself sat upon them. The eggs were put back, but he soon afterwards took them again. This induced the owner, by way of experiment, to have a nest made, and as many eggs put into it as it was thought the cock could conveniently cover. The bird seemed highly pleased with this mark of confidence; he sat with great patience on the eggs, and was so attentive to the care of hatching them, as scarcely to afford himself time to take the food necessary for his support. At the usual period, twenty-eight young-ones were produced: and the cock, which was in some measure the parent of this numerous offspring, appeared



THE OCELLATED TURKEY.

perplexed on seeing so many little creatures picking around him, and requiring his care. He was not, however, trusted with the rearing of the brood, lest he should neglect them; and they were reared by other means.

The disposition of the female Turkey is in general much more mild and gentle than that of the male. When leading out her young family to collect their food, though so large and apparently so powerful a bird, she gives them very little protection against the attacks of

any rapacious animal that comes in her way. She rather warns them to shift for themselves, than prepares to defend them. "I have heard a Turkey-hen, when at the head of her brood, (says the Abbé de la



WILD TURKEYS.

Pluche,) send forth the most piteous scream, without my being able to perceive the cause: her young-ones, however, immediately when the warning was given, skulked under the bushes, grass, or whatever

else seemed to offer shelter or protection. They even stretched themselves at full length on the ground, and continued lying motionless as if dead. In the meantime the mother, with her eyes directed upwards, continued her cries and screaming as before. On looking up, in the direction in which she seemed to gaze, I discovered a black spot just under the clouds, but was unable at first to determine what it was; however, it soon appeared to be a bird of prey, though at first at too great a distance to be distinguished. I have seen one of these animals continue in this agitated state, and her whole brood pinned down as it were to the ground, for four hours together; whilst their formidable foe has taken his circuits, has mounted, and hovered directly over their heads: at last, upon his disappearing, the parent changed her note, and sent forth another cry, which in an instant gave life to the whole trembling tribe, and they all flocked around her with expressions of pleasure, as if conscious of their happy escape from danger."

Josselyn says that he has eaten part of a Turkey-cock which, after it was plucked and the entrails were taken out, weighed thirty pounds. Lawson, whose authority is unquestionable, saw half a Turkey serve eight hungry men for two meals, and says that he had seen others which he believed would each weigh forty pounds. Some writers assert that instances have occurred of Turkeys weighing sixty pounds.

The females lay their eggs in spring, generally in some retired and obscure place; for the cock, enraged at the loss of his mate while she is employed in hatching, is apt otherwise to break them. They sit on their eggs with so much perseverance, that if not taken away, they will sometimes perish with hunger rather than leave the nest. They are exceedingly affectionate to their offspring.

In a wild state Turkeys are gregarious; and associate in flocks, consisting sometimes of more than five hundred. They frequent the great swamps of America to roost; but they leave these at sun-rise, to repair to the dry woods in search of acorns and berries. They perch on trees, and gain the height they wish by rising from bough to bough; and they generally mount to the summits of even the loftiest trees, so as to be beyond musket-shot. They run very swiftly, but they fly awkardly; and about the month of March they become so fat that they cannot fly beyond three or four hundred yards, and are then easily run down by a horseman.

It is seldom indeed that wild Turkeys are now seen in the inhabited parts of America; and they are only found in great numbers, in the distant and most unfrequented parts. If the eggs of wild Turkeys be hatched under the tame birds, the offspring are said still to retain a certain degree of wildness, and to perch separate from the others; yet they will mix and breed together in the season.

The Indians make an elegant clothing of the feathers of Turkeys. Thy twist the inner webs into a strong double string with hemp, or with the inner bark of the mulberry-tree, and work it like matting. This appears very rich and glossy, and as fine as silk shag. The natives of Louisiana make fans of the tail; and of four tails joined together, the French used formerly to construct a parasol.

OF THE PEACOCK TRIBE IN GENERAL.

The bill is strong and convex. The head is covered with feathers which bend backward. The nostrils are large. The feathers of the train are long, broad, expansile, and covered with eye-like spots.



There are only four known species of Peacocks. These are birds, for the most part, of large size. They feed on insects, fruit, and grain. One of them (the common kind) is an inhabitant of Asia and Africa, another of China, the third of Thibet, and the fourth of Japan.

THE CRESTED, OR COMMON PEACOCK.

If, says M. de Buffon, empire were claimed by beauty, and not by power, the Peacock would, without contradiction, be the king of birds. For elegance of form, and brilliancy of plumage, it is exceeded by none of the feathered race. On the Peacock it is that nature appears to have bestowed her treasures with the greatest profusion. Its large size, imposing manner, firm tread, and noble figure: the rich crest upon its head, adorned with brilliant colors: its matchless plumage, appearing to combine every thing that can delight the eye —all contend to place it high in our esteem. These beautiful plumes, however, are shed every year. At this period the bird seems humiliated; and searches the shades, in order to conceal himself from our eyes until a new spring restores to him his usual attire.



COMMON PEACOCK.

The brilliant train of the Peacock is not its tail: the long feathers that form it do not grow from the rump, but upon the back. A range of short, brown, stiff feathers, fixed upon the rump, is the real tail, and serves as a support to the train. When the train is elevated, nothing

appears of the bird in front, except its head and neck; but this would not be the case, were those long feathers fixed only on the rump. By a strong muscular vibration, these birds can make the shafts of their long feathers clatter together like the swords of a sword-dancer.

Peacocks are found wild in Asia and Africa: but the largest and finest of these birds are seen in the neighborhood of the Ganges, and in the fervid plains of India. They are mentioned in the Sacred Writings, where they are enumerated as constituting part of the cargoes of the fleet which imported the treasures of the East to the court of Solomon.

These birds were highly esteemed by the Romans. Pliny states, that the first Roman who ordered Peacocks to be served up at his table, was Hortensius, in a grand entertainment which he gave when he was consecrated high priest. Marcus Aufidius Lurco was the first who attempted to fatten these birds in a manner which was peculiar to himself, and by which he is said to have derived an annual income of more than sixty thousand sesterces.

The females lay only a few eggs at a time, and these at a distance of usually three or four days from each other. When they are at liberty and act from natural instinct, they always deposit their eggs in some sequestered or secret place. These are white and spotted, like the eggs of the Turkey. The incubation occupies from twenty-seven to thirty days, according to the temperature of the climate and of the season.

As Peacocks, in this country, are not able to fly well, they climb from branch to branch, to the tops of the highest trees. From these and from the roofs of houses, it is, that they usually make their harsh and very peculiar cry. In this cry, one note is deep and the other sharp, the latter exactly an octave above the former; and both have somewhat of the piercing sound of a trumpet.

The females of this species, like those of the Pheasant, have sometimes been known to assume the plumes of the male. Lady Tynte had a favorite pied Peahen, which eight times produced chicks. Having moulted when about eleven years old, the lady and her family were astonished to see her display the feathers that are peculiar to the other sex, and appear like a pied Peacock. In the following year she moulted again, and produced similar feathers. In the third year she did the same, and then had also spurs resembling those of the cock. The hen never bred after this change of her plumage.

THE BRUSH TURKEY.

The Megapodidæ, deriving their name from the enormous size of their feet, are inhabitants of Australia and the Papuan Islands. In the habits of these birds there is a peculiarity hardly less singular than surprising. Instead of hatching their eggs by the warmth of the body, as most other birds do, not excepting the Ostrich, the Megapodes bury their eggs in a decaying heap of grass and leaves, trusting to the heat furnished by the fermentation to hatch the eggs.

Brush Turkey is principally found in the thick brushwood of New

South Wales. Mr. Gould, who first brought it before the public, gives this curious account of their nests:—"The mode in which the materials composing these mounds are accumulated is equally singular, the bird never using its bill, but always grasping a quantity in its foot, throwing it backwards to the common centre, and thus clearing the surface of the ground for a considerable distance so completely that scarcely a leaf or a blade of grass is left. The heap being accumulated, and time allowed for a sufficient heat to be engendered, the eggs are deposited, not side by side as is ordinarily the case, but planted at the distance of nine or twelve inches from each other, and buried at nearly an arm's depth, perfectly upright, with the large end upwards. They are covered up as they are laid, and allowed to remain until hatched. I am credibly informed, both by natives and settlers living near their haunts, that it is not an unusual event to obtain nearly a bushel of eggs at one time from a single heap; and as they are delicious eating they are eagerly sought after.



BRUSH TURKEY.

When the Brush Turkey is disturbed, it either runs through the tangled underwood with singular rapidity, or springs upon a low branch of some tree, and reaches the summit by a succession of leaps from branch to branch. This latter peculiarity renders it an easy prey to the sportsman.

THE MOUND-MAKING MEGAPODE,

Inhabits the dense thickets bordering on the sea-shore, and is never found far inland. Like the Brush Turkey, it deposits many eggs in one mound, but instead of placing them at intervals in the mound, the bird makes deep holes, from five to six feet, at the bottom of which the eggs are deposited. The natives obtain the eggs by scratching up the earth with their fingers, until they have traced the hole to the bottom; a very laborious task, as the holes seldom run straight, and turn off at right angles to avoid a stone or root. The mounds are enormously large. Mr. Gilbert was told by the residents that they were the tombs of the aborgines, nor was it until after some time that their real nature was made known. The height of one mound was fifteen feet, and its circumference at the base sixty feet.

OF THE PHEASANT TRIBE IN GENERAL.

The characters of the present tribe are a short, convex, and strong bill; the head more or less covered with carunculated bare flesh on the sides, which in some species is continued upwards to the crown, and beneath so as to hang pendent under each jaw; and the legs in most of the species are furnished with spurs.

The females of this tribe produce many young-ones at a brood: these they take care of for some time, leading them abroad, and pointing out food for them. The nests of the whole tribe are formed on the ground.

THE COMMON PHEASANT.

This beautiful bird is very common in almost all the southern parts of the Old Continent, whence it was originally imported into our country.

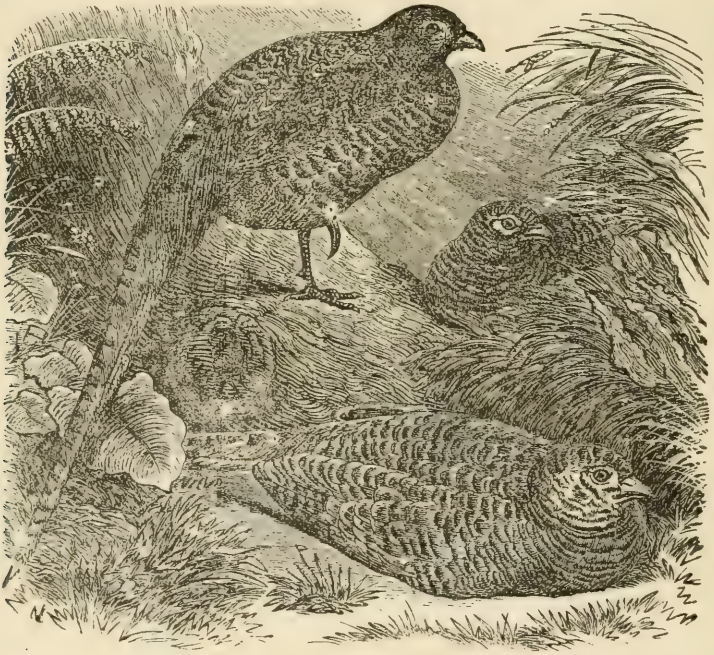
Pheasants are much attached to the shelter of thickets and woods, where the grass is long; but, like Partridges, they likewise breed in clover-fields. They form their nests on the ground: and the females lay from twelve to fifteen eggs, which are smaller than those of the domestic hen. In the mowing of clover near woods that are frequented by Pheasants, the destruction of their eggs is sometimes very great. In some places, therefore, game-keepers have directions to hunt the birds from these fields as soon as they begin to lay, until their haunt is broken, and they retire into the corn. Poultry Hens are often kept ready for sitting on any eggs that may be exposed by the scythe; and, with care, great numbers are thus rescued from destruction. The nest of the Pheasant is usually composed of a few dry vegetables put carelessly together, and the young-ones follow their mother, like chickens, as soon as they break the shell. The parents and their brood, if undisturbed, remain in the stubbles and hedgerows, for some time after the corn is ripe. If disturbed, they seek the woods, and only issue thence in the mornings and evenings to feed among the stubbles. These birds are fond of corn; but can procure a subsistence without it; since they often feed on the wild berries of the woods, and on acorns.

In confinement the female Pheasant neither lays so many eggs, nor hatches nor rears her brood with as much care and vigilance, as in the fields out of the immediate observation of man. Indeed, in the business both of incubation and rearing the young-ones, the domestic Hen is generally made a substitute for the Hen Pheasant.

The wings of these birds are short, and ill-adapted for considerable flights. On this account, the Pheasants on the island called *Isola Madre* in the *Lago Maggoire* at Turin, as they cannot fly over the lake, are imprisoned. When they attempt to cross, they are almost always drowned. The Pheasant is a stupid bird. On being roused it will often perch on a neighbouring tree, where its attention will be

so fixed on the dogs, that the sportsman can without difficulty approach within gun-shot. It has been asserted that the Pheasant imagines itself out of danger whenever its head only is concealed. Sportsmen, however, who recount the stratagems that they have known old Cock Pheasants to adopt, in thick and extensive coverts, before they could be compelled to take wing, convince us that this bird is by no means deficient in the contrivances that are necessary for its own preservation.

At the commencement of cold weather, Pheasants fly after sun set into the branches of the oak-trees, and there roost during the night



COMMON PHEASANTS.

This they do more frequently as the winter advances, and the trees lose their foliage. The male birds, at these times, make a noise, which they repeat three or four times successively, called by sportsmen *cocketing*. The hens, on flying up, utter one *shrill whistle*, and then are silent. Poachers avail themselves of these notes, to discover the roosting places; and there (in woods that are not well watched) they shoot them with the greatest certainty. Where woods are watched, the poacher, by means of phosphorus, lights several brimstone matches; and he moment the sulphurous fumes reach the birds, they drop to the ground. Or, he fastens a snare of wire to the end of a long pole; and by means of this, drags them, one by one, from the trees. He sometimes catches these birds in nooses made of wire, or twisted horsehair, or even with a briar set in the form of a noose, at the verge of a wood. The birds entangle themselves in these, as

they run into the adjacent fields to feed. Foxes destroy great numbers of Pheasants.

The males begin to crow during the first week in March; and the noise can be heard at a considerable distance. They occasionally come into farm-yards in the vicinity of coverts where they abound, and sometimes produce a cross breed with the common fowls.

It has been contended that Pheasants are so shy, as not to be tamed without great difficulty. Where, however, their natural fear of man has been counteracted, from their having been bred under his protection; and where he has almost constantly appeared before their eyes in their coverts, they will come to feed immediately on hearing the keeper's whistle. They will follow the keeper in flocks; and scarcely allow the peas to run from his bag into troughs placed for the purpose, before they begin to eat. Those that cannot find room at one trough, follow him with the same familiarity to others

Pheasants are found in most parts of England, but are by no means plentiful in the north; and they are seldom seen in Scotland. Wood and corn lands seem necessary to their existence. Were it not for the exertions of gentlemen of property, in preserving these birds in their woods from the attacks of poachers and sportsmen, the breed, in a few years, would be extinct. The demand for Pheasants at the tables of the luxurious, and the easy mark they offer to the sportsman, particularly since the art of *shooting flying* has been generally practised, would soon complete their destruction. Mr. Stackhouse, of Pendarvis in Cornwall, informed me, that forty years ago, he recollects hearing old people say, that in their youth, and in the generation before them, Pheasants were very plentiful in that county; but the race is now extinct.

The general weight of male Pheasants is from two pounds and a half, to three pounds and a quarter. That of the hens is usually about ten ounces less.

The female birds have sometimes been known to assume the plumage of the male. But with Pheasants in a state of confinement, those that take this new plumage always become barren, and are spurned and buffeted by the rest. From what took place in a hen Pheasant, belonging to a lady, a friend of Sir Joseph Banks, it would seem probable that this change arises from some alteration of temperament at a late period of the animal's life This lady had paid particular attention to the breeding of Pheasants. One of the hens, after having produced several broods, moulted, and the succeeding feathers were exactly like those of a cock. This animal, however never afterward had young ones.

THE HORNED PHEASANT.

This beautiful specimen of the genus Pheasant is a native of China and Thibet. It is as rare as it is beautiful. But one has as yet reached Europe. In size it is between a Turkey and common fowl.

Their usual haunts, says "Mountaineer," are high up, not far from the snows, in dense and gloomy forests, where they live either alone, or in small scattered parties. In winter they descend the hills, and then their favorite haunts are in the thickest parts of the forests of oak, chestnut and morenda pine, where the box tree is abundant, and where under the forest trees a luxuriant growth of "ringalt" or the hill bamboo forms an underwood in some places almost impenetrable. They keep



TEMMINCK'S HORNED PHEASANT.

in companies of from two or three to ten or a dozen or more, not in compact flocks, but scattered widely over a considerable space of forest, so that many at times get quite separated and are found alone. Jerdon tells us that if undisturbed, they generally remain pretty close together, and appear to return year after year to the same spot, even though the ground be covered with snow, for they find their living then upon the trees.

THE CHINESE PHEASANT.

This bird is distinguished by having a yellow crest, the breast scarlet, the back and rump yellow, the upper tail coverts long, narrow, and red, the wing-coverts varied with bay and brown, the quill-feathers brown, with yellowish spots, and the secondary quill-feathers blue.

The singular beauty of the Chinese Pheasants has long rendered these birds objects of admiration. Though inhabitants of the warmer districts of China, they can, without difficulty, be kept in aviaries in our own country. The females are smaller than the males, have a shorter tail, and plumage of much less brilliant color. In many instances, however, when old, they have been known, like the Pea-hen, and the female European Pheasant, to assume a plumage similar to that of the male.

The eggs of the Chinese Pheasant resemble those of the Guinea fowl; and are in proportion smaller than those of the poultry-hens.

Sir Hans Sloane kept a male Chinese Pheasant nearly fifteen years, during the whole of which time it continued in perfect health. From this bird he obtained a mixed breed with the common Pheasant. Of this breed the produce had a plumage much less beautiful than that of the Chinese species.

Chinese Pheasants suffer more inconvenience in European climates, from the humidity and changeable state of the atmosphere, than from the cold weather of winter. They require more care than common Pheasants, but are fed and attended in the same manner

THE ARGUS PHEASANT.

The Argus Pheasant is of a clayey-yellow color, spotted with black. The face is red, and behind the head is a blue crest. The wings are grey, and have a great number of eye-like spots. The two middle feathers of the tail are very long, and are spotted through their whole length.

The *Argus Pheasant*, has been so called from the number of eye-like spots with which its wing-feathers are covered. These birds are found in many of the northern parts of China, and in several of the interior districts of India and Sumatra. They are nearly as large as Peacocks, and rank among the most beautiful of the feathered creation. They are extremely wild, and very difficult to be kept alive for any length of time after they have been taken from the woods. In a strong light they appear dazzled, and when exposed to such they seem melancholy and inanimate; but in the dark they recover all their animation.

These birds have a cry not much unlike that of a Peacock. Their flesh is palatable, and in flavor like that of the common Pheasant. The wing and tail-feathers are in considerable request as ornaments in female head-dresses.

THE DOMESTIC COCK.

This bird differs very much from the wild descendants of its primitive stock; which are said to inhabit the forests of India, and most of the islands of the Indian seas.



JUNGLE FOWL.

"I have just witnessed (says M. de Buffon) a curious scene. A Sparrow-hawk alighted in a populous court-yard: a young cock of this year's hatching instantly darted at him, and threw him on his back. In this situation the Hawk defended himself with his talons and his bill, intimidating the hens and Turkeys, which screamed tumultuously round him. After he had a little recovered himself, he rose and was taking wing, when the cock rushed upon him a second time, over turned him, and held him down so long, that he was caught."

The cock is very attentive to his females, hardly ever losing sight of them. He leads, defends, and cherishes them: collects them together when they straggle; and seems to eat unwillingly till he sees them feeding around him. Whenever any strange cock appears

within his domain, he immediately attacks the intruder, and if possible, drives him away.

His jealousy does not, however, seem to be altogether confined to his rivals. It has sometimes been observed to extend even to his beloved female; and he appears capable of being actuated by revenge, founded on suspicions of her conjugal infidelity. Dr. Percival, in his Dissertations, relates an incident that happened at the seat of a gentleman near Berwick, which justifies this remark. "My mowers," says this gentleman, "cut a Partridge on her nest; and immediately brought the eggs (fourteen in number) to the house. I ordered them to be put under a very large and beautiful hen, and her own to be taken away. They were hatched in two days, and the hen brought them up perfectly well till they were five or six weeks old. During that time they were constantly kept in an out-house, without being seen by any of the other poultry. The door happening to be left open, the cock got in. My housekeeper, hearing the hen in distress, ran to her assistance; but did not arrive in time to save her life. The cock, observing her with the brood of Partridges, had fallen upon her with the utmost fury, and killed her. The housekeeper found him tearing the hen with both his beak and spurs; although she was then fluttering in the last agony, and incapable of any resistance. This hen had formerly been the cock's greatest favorite."

Mr. Jesse says: "I am always sorry to see the anxiety and misery of a hen who has hatched ducks. When they take to the water she is in perfect agony, running round the brink of the pond, and sometimes flying into it, in hopes of rescuing her brood. A hen who had reared three broods of ducks became so habituated to their taking to the water, that she would fly to a large stone in the middle of the pond, and patiently watch her brood as they swam about. The fourth year she hatched her own eggs, and finding that her chickens did not take to the water, she flew to the stone in the pond, and called to them with utmost eagerness."

The patience and perseverance of the hen in hatching, are truly extraordinary. She covers her eggs with her wings, fostering them with a genial warmth; and often turns them, and changes their situations, that all their parts may receive an equal degree of heat. She seems to see the importance of her employment; and is so intent on her occupation, as to neglect in some measure even the necessary supplies of food and drink. In about three weeks the young brood burst from their confinement; and the hen, from the most cowardly and voracious, becomes (in the protection of her young) the most daring and abstemious of all birds. If she cast her eyes on a grain of corn, a crumb of bread, or any aliment, though ever so inconsiderable, that is capable of division, she will not touch the least portion of it; but gives her numerous train immediate notice of her success, by a peculiar call, which they all understand. They flock in an instant round her, and the whole treasure is appropriated to them. Though by nature timid, and apt to fly from the smallest assailant yet when marching at the head of her brood she is a heroine, she is

fearless of danger, and will fly in the face of the fiercest animal that offers to annoy her.

As the chickens reared by the hen bear no proportion to the number of eggs she produces, many artificial schemes of rearing them have been attempted. The most successful, though by no means the most humane, is said to be where a capon is made to supply the place of a hen. He is rendered very tame: the feathers are plucked from his breast, and the bare parts are rubbed with nettles. The chickens are then put to him; and, by their running under his breast with their soft and downy bodies, his pain is so much allayed, and he feels so much comfort to his featherless body, that he soon adopts them, feeding them like a hen, and assiduously performing all the functions of the tenderest parent.

Chickens have long been hatched in Egypt by means of *artificial heat*. This is now chiefly practised by the inhabitants of a village called Berme, and by those who live at a little distance from it. Towards the beginning of autumn, these persons spread themselves over the country; and each of them is ready to undertake the management of an oven. The ovens are of different sizes, each capable of containing from forty to eighty thousand eggs; and the number of ovens in different parts is about three hundred and eighty-six. They are usually kept in exercise for about six months; and, as each brood occupies twenty-one days in hatching, it is easy, in every oven to produce eight different broods of chickens in the year.

The ovens where these eggs are placed, are of the most simple construction; consisting only of low arched apartments of clay. Two rows of shelves are formed, and the eggs are placed on these in such a manner as not to touch each other. They are slightly moved five or six times every twenty-four hours. All possible care is taken to diffuse the heat equally throughout; and there is but one aperture, just large enough to admit a man stooping. During the first eight days the heat is rendered great; but during the last eight it is gradually diminished, till at length, when the young brood are ready to come forth, it is reduced almost to the state of the natural atmosphere. By the end of the first eight days it is known which of the eggs will be productive. Every person who undertakes the care of an oven, is under the obligation only of delivering to his employer two-thirds of as many chickens as there have been eggs given to him; and he is a considerable gainer by this bargain, as it almost always happens that many more than that proportion of the eggs produce chickens.

This useful and advantageous mode of hatching eggs, was introduced into France by M. de Reaumur; who, by a number of experiments, reduced the art to certain principles. He found that the degree of heat necessary for producing all kinds of domestic fowls was the same, the only difference consisting in the time during which it ought to be communicated to the eggs: it will bring the Canary-bird to perfection in eleven or twelve days, while the turkey-poult requires twenty or twenty-eight. M. de Reaumur found that stoves heated by pipes from a baker's or the furnaces of glasshouses, succeeded better than those made hot by layers of dung, the mode preferred in

Egypt. These should have their heat kept as nearly equal as possible and the eggs should be frequently removed from the sides into the middle, in order that each may receive an equal portion. After the eggs are hatched, the offspring should be put into a kind of low boxes without bottoms. and lined with fur; the warmth of which supplies the place of a hen, and in which the chickens can at any time take shelter. These should be kept in a warm room till the chickens acquire some strength; the chickens then may, with safety, be exposed to the open air, in a court-yard.

As to the mode in which the young brood are fed: a whole day generally elapses after they are hatched, before they take any food at all; a few crumbs of bread are given for the subsequent day or two, after which time they begin to pick up insects and grain for themselves. But in order to save the trouble of attending them, capons may be taught to watch them in the same manner as hens. M. de Reaumur says, that he has seen more than two thousand chickens at once, all led about and defended by only three or four capons. It is asserted, that even cocks may be taught to perform this office.

The progress of the incubation of the chicken in the natural way, is a subject too curious, and too interesting, to be passed over without notice. The hen has scarcely sat on the egg twelve hours, before some lineaments of the head and body of the chicken appear. The heart may be seen to beat at the end of the second day; it has at that time somewhat the form of a Horse-shoe, but no blood yet appears. At the end of two days, two vesicles of blood are to be distinguished, the pulsation of which is very visible: one of these is the left ventricle, and the other the root of the great artery. At the fiftieth hour, one auricle of the heart appears, resembling a noose folded down upon itself. The beating of the heart is first observed in the auricle, and afterwards in the ventricle. At the end of seventy hours, the wings are distinguishable; and on the head two bubbles are seen for the brain, one for the bill, and two others for the fore and hind part of the head. Towards the end of the fourth day, the two auricles, already visible, draw nearer to the heart than before. The liver appears towards the fifth day. At the end of a hundred and thirty-one hours, the first voluntary motion is observed. At the end of seven hours more, the lungs and stomach become visible; and four hours after this, the intestines, the loins, and the upper jaw At the hundred



COCK.

and forty-fourth hour, two ventricles are visible, and two drops of blood instead of the single one which was seen before. On the seventh day, the brain begins to have some consistence. At the hundred and nintieth hour of incubation, the bill opens, and the flesh appears in the breast; in four hours more, the breast-bone is seen; and in six hours after this, the ribs appear to be forming from the back, and the bill is very visible, as well as the gall-bladder. The bill becomes green at the end of two hundred and thirty-six hours; and if the chicken be taken out of its coverings, it evidently moves itself. The feathers begin to shoot out towards the two hundred and fortieth hour, and the skull becomes gristly. At the two hundred and sixty-fourth hour, the eyes appear. At the two hundred and eighty-eighth, the ribs are perfect. At the three hundred and thirty-first, the spleen draws near the stomach, and the lungs to the chest. At the end of three hundred and fifty-five hours, the bill frequently opens and shuts; and at the end of the eighteenth day, the first cry of the chicken is heard. It afterwards gets more strength, and grows continually, till at length it is enabled to set itself free from its confinement.

In the whole of this process, we must remark that every part appears exactly at its proper time: if, for example, the liver is formed on the fifth day, it is founded on the preceding situation of the chicken, and on the changes that were to follow. No part of the body could possibly appear either sooner or later, without the whole embryo suffering; and each of the limbs becomes visible at the fit moment This ordination, so wise and so invariable, is manifestly the work of a Supreme Being: but we must still more sensibly acknowledge his creative powers when we consider the manner in which the chicken is formed out of the parts which compose the egg. How astonishing must it appear to an observing mind, that in this substance there should be, at all, the vital principle of an animated being! That all the parts of an animal's body should be concealed in it, and require nothing but heat to unfold and quicken them! That the whole formation of the chicken should be so constant and regular! That, exactly at the same time, the same changes should take place in the generality of eggs! That the chicken, the moment it is hatched, should be heavier than the egg was before! But even these are not all the wonders in the formation of a bird from the egg: (for this instance will serve to illustrate the whole of the feathered tribes:) there are others, altogether hidden from our observation; and of which from our very limited faculties, we must ever remain ignorant.

I cannot take leave of this animal, without a few observations on the savage diversion of cock-fighting; which (to the disgrace of a Christian nation) is encouraged, not merely by the lowest and meanest, but by some persons even in the highest ranks of society. The Shrove-Tuesday massacre of throwing at these unfortunate animals is, indeed, almost discontinued: but the cock-pit yet remains a reproach to the character of Englishmen. The refinements which in England have taken place in the pitting of these courageous birds against each other would strike almost the rudest of the savage tribes of mankind with horror. The Battle-royal and the Welsh-main would scarcel-

be tolerated by any other nation of the world. In the former an unlimited number of cocks are pitted, of which only the last surviving bird is accounted the victor. Thus, suppose there was at first sixteen pair of cocks: of these, sixteen are killed; the remaining sixteen are pitted a second time; the eight conquerors of these are pitted a third time; the four conquerors a fourth time; and lastly, the two conquerors of these the fifth time: so that (incredible barbarity!) thirty-one cocks must be inhumanly murdered in a single battle.

"Are these your sovereign joys, Creation's lords?
Is death a banquet for a godlike soul?"

The greatert rivals of the English in the practice of cock-fighting, are the inhabitants of Sumatra and some other parts of the East. They indeed pay, perhaps a greater attention to the training and feeding of the birds. They arm one of the legs only, not with a slender gaff, but with a little implement in the form of a scimeter, with which the animals make the most terrible destruction. The Sumatrians fight their cocks for vast sums: a man has been known to stake his wife or children, and a son his mother or sisters, on the issue of a battle. In disputed points, four arbitrators are appointed; and if they cannot agree, there is no appeal but to the sword. Some of these people have a notion that their cocks are invulnerable: a father on his death-bed has, under this persuasion, been known to direct his son to lay his whole property on a certain bird, fully persuaded of consequent success.

THE DOMESTIC FOWLS.

The domestic fowls are too well known to need much description There are many varieties, the most conspicuous of which are the Cochin-China, Crested, Bantam, and Bankiva. The Game Fowl was formerly in great request for the cruel sport of cock-fighting, an amusement which, although happily now almost extinct, was in great vogue but a few years since. The Java Fowl, of which the enormous Cochin-China bird is a variety, is supposed to be the origin of the Barn-door fowl. The cock has been long celebrated for his warlike propensities, and his habit of greeting the approach of morn by his "shrill clarion"



PERSIAN COCK.

THE COCHIN-CHINA FOWL.

A young hen of the Cochin-China breed, when introduced among the other poultry of a farm-yard, was shamefully persecuted by its companions. It was very absurd to see the poor creature pecking up a stray crumb or two outside the general circle, and flying in terror before a little game hen, if it ventured to approach too close. The principal advantage of this bird seems to be that the chickens, from their superior size, are ready for the market at an earlier age than those of the ordinary fowl.



COCHIN-CHINA FOWL.

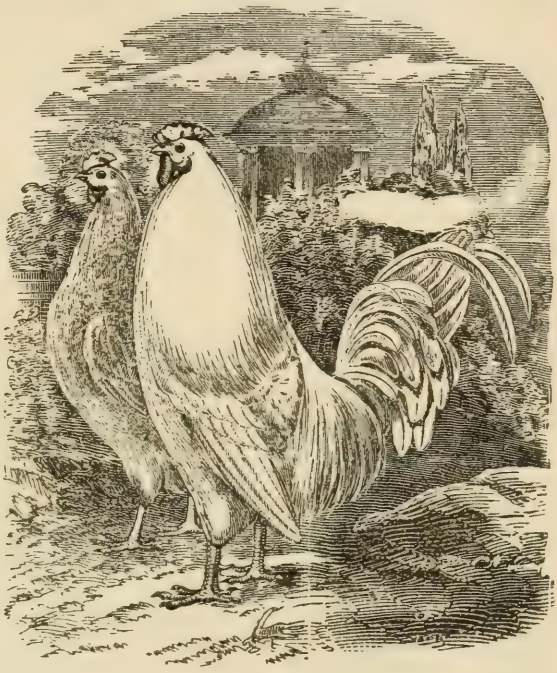
Among other distinctive characteristics, these fowls possess one which is too striking not to be mentioned. The wing is jointed, so that the posterior half can at pleasure be doubled up, and brought forward between the anterior half and the body The birds can do this at pleasure; and the appearance the manœuvre imparts to their form, has procured for them the title of "Ostrich fowl."

THE DORKING FOWL.

This bird is highly esteemed where ever it has been bred in its purity. Many spurious ones have been passed off on the uninformed, and therefore the general reputation of the breed is not as good as it should be. It is not a heavy fowl, at best; but is an excellent layer, the best of mothers and its meat is delicate and inviting. The average weight of the Dorking is about six and a half to seven pounds for cocks, and five to six pounds for hens. The bird owes its name to its having been bred in a town in Surrey, England, of the same appellation. Its most striking peculiarity is the having of five toes, or two hind toes instead of one. The color of the Dorking is generally pure white, spotted or spangled with black. These colors sometimes merge into a gray or grizzle.

This has been called the Capon Fowl of England; and it forms the chief supply of the London market. Its flesh is extremely delicate, especially after caponization. Writers on poultry breeding differ much in the description of the true fowl. But the following are the prominent points without which the breed is impure:—"A fine head,

with brilliant, reddish tinged eyes, by some termed ferret-eyed; single or double-comb, in both sexes; a graceful neck, rather short than long; wide, deep, projecting breast; the body is not only long, but round, rather than flat or square; and the legs, considering their size, short, and invariably of a silver white." The Dorking is very hardy, and its young are easily reared; both of which are very important recommendations for fowls in the Northern and Eastern States. When crossed with other birds they invariably improve the form, and the quality of the meat.



DORKING FOWL.

These birds have been long prized, and it is now many years since their superiority over our ordinary domestic varieties, was discovered and appreciated. They were first noticed and the variety adopted by the Cumberland breeders, whence they were carried into Lancashire and Westmoreland, and gradually spread over all England. They are also found in many parts of Ireland. Whether, however, it is the result of injudicious treatment, imperfect feeding, or change of climate, when met with far from the region where they originated, they appear to have lost much of their superiority.

THE BANTAM FOWL.

This beautiful little domestic bird came originally from the province of Bantam, in Java. In this country, we have every kind of color and comparative size of "Bantam," but in their *purity*, the "Sir John Seabright," "the Java," or the "African" varieties, are rare birds. "This bird," says Richardson, "has its legs perfectly naked to the toes, and approaches in form more nearly to the game breed. The high bred cock of this breed should have a *rose* comb, full hackles a well-feathered and well-carried tail, a stately and courageous

demeanor, and should not be quite a pound weight. The favorite color is a golden yellow, the feathers edged with black, the wings barred with purple, tail-feathers and breast black. The Bantam will fight with great resolution." Occasionally, a variety is met with that is smooth-legged. They are very domestic, often making their nests in the kitchen and the cupboards of the dwelling, when permitted. They are excellent layers and good nurses.

The hackles, or long neck-feathers of this and the preceding bird, are much used by anglers for making artificial flies. Some remarkable specimens have been described by travellers as the Frizzled and the Silky fowls of Asiatic origin, of which we give an illustration.



SILKY FOWLS.

THE POLISH FOWL.

This beautiful bird has become pretty generally known in the American farm-yard. It is, however, a small fowl, in comparison with many other. "Of the Polish fowls," says Richardson, "there are three sub-varieties, one of which would appear to be nearly, if not altogether extinct in its native country. This fowl is, perhaps, the most unchanged from the primitive stock of any we are now acquainted

with, being, beyond doubt, the immediate and almost unmixed descendant of the wild cock of St. Jago." The three varieties are—*The Spangled Polish*—a bird of extraordinary beauty, and difficult to be procured. In color, it presents a splendid combination of a bright orange, a clear white, a brilliant green, and a jetty black, softened down with a rich and pure brown: every feather is tipped with white so as to produce the effect whence has been derived the term spangled. The flesh of these birds is of good quality, and they are very prolific. The fowl known as the Golden Pheasant is a cross of this variety and the Black Polish fowl.

The second variety of the Polish fowl is the well-known Black fowl, with a white tuft on the crown. Their appearance is handsome, and being very good layers, they are highly esteemed. The third variety entirely white, without a feather of any other color. They are very beautiful, but not quite so hardy as the Black.

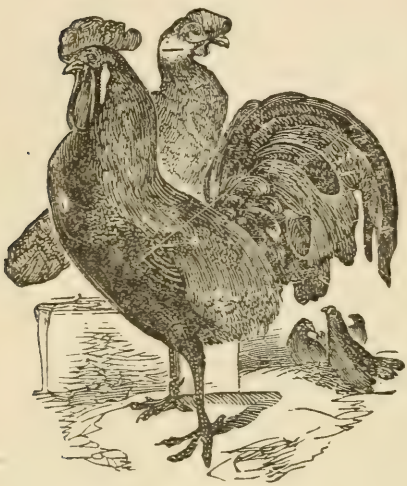
THE SHANGHÆ FOWL.

The Shanghæ fowl has become generally known in the Northern States, and especially in New England. It was brought from Shanghæ, China, in 1848, by Captain Forbes, and since that time other importations of the species have been effected. There are two varieties, which may be distinguished as the yellow, including the brown buff and the fawn colored,) and the white. The yellow, in general shape and appearance, resembles the Cochin-China fowls, though they have greater depth of quarters and less depth of breast, and are of a lighter color. Their general plumage is of a bright yellow, or gold color, variegated with dark brown and red. They are quiet tempered, their gait is proud and showy, but the legs are rather too long for beauty. For laying properties, early maturity, and table use, there is no better species in America. The principal characteristics of the Yellow Shanghæ, by which they may be distinguished from the Cochin China fowl is, that the legs are covered with feathers. The White Shanghæ, partakes of all the characteristics of the Yellow, with the exception of color. Its legs are yellow, and very heavily feathered. Their general appearance is cleanly and beautiful, and in laying, or for food, they are quite equal to the Yellow species.

The patience and perseverance of the hen while hatching are truly extraordinary: she covers her eggs with her wings, fostering them with a genial warmth, often turning them, and changing their situation, that all their parts may receive an equal degree of warmth. So intent is she on her task, as to neglect, in some degree, even the ordinary supplies of food and drink. In about three weeks the young brood burst from their confinement, when from being one of the most cowardly and voracious, she becomes one of the most daring and abstemious of all animals. If she casts her eye on a grain of corn, or even a crumb of bread, she will not touch it, but gives her numerous train immediate notice of her success by a peculiar call, which they all understand. They flock around her, and the precious morsel is divided among them.

THE SPANISH FOWLS.

The Black Spanish fowls are favorites among the poulterers. They are large, showy, and possess the blackest of plumage. They have an unusually large comb and wattles, and a white cheek. As table birds, their flesh is particularly white, tender and juicy The hens are layers of the first order, being extremely prolific, easy fed, and easy to control, when required to sit. "I regard these birds," says Richardson, "as the result of the highest *artificial* culture," and in support of his opinion, he adduces their unusually large comb and wattles, characteristics not found in the primitive varieties. The eggs are of large size, fine-flavored, and unlike most of the eggs from dark colored poultry, the shells are *white as alabaster.*



SPANISH FOWLS.

THE BANKIVA FOWL.

This fowl is supposed to be the original stock, of our domestic varieties. Dickson thus describes it:—"The cock has a thin, indented, or scolloped comb, and wattles under the mouth: the tail a little elevated above the rump, and the feathers somewhat disposed in the form of tiles. The feathers of the neck are long, falling down and rounded at the tips, and are of the finest gold color. The head and neck are fawn-colored; the wing coverts are dusky, brownish and black; the tail and belly are black; the hen is of a dusky, ashy gray and yellowish color, and has her comb and beard much smaller than the cock, with no feathers on the neck, besides the long hackles.'

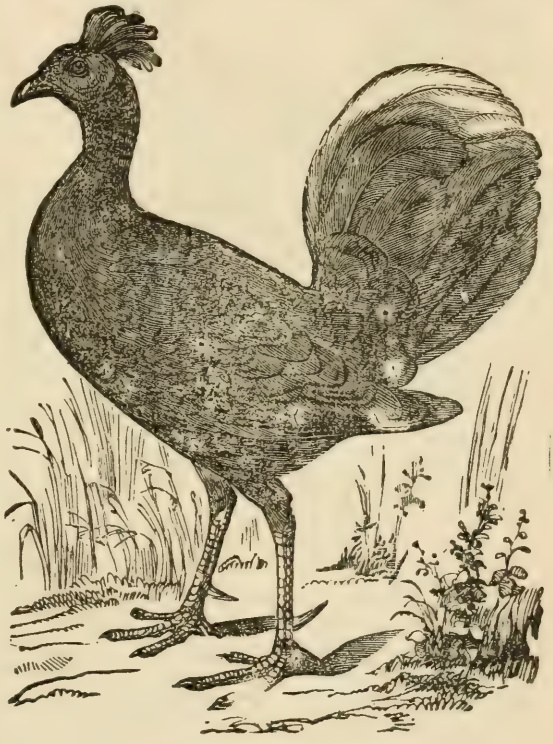
The Bankiva cock is nearly twice as large as the common Bantam The hen is scarcely as large as Sonnerat's Jungle fowl. The breed is native to the East Indies, where it is much valued by the lovers of cock-fighting. The Bankiva is very bold and spirited, though inferior to Sonnerat's fowl in these qualities as in others more valuable. It was for some time a question, whether this fowl was not derived from the same stock as the larger Jungle fowl; but the question has been determined in favor of its being a distinct variety.

The Jungle fowls have a powerful body, short wings, and a moderate-sized graduated tail, consisting of fourteen feathers, placed vertically one above another. The beak is long, of medium length, the high foot is armed with a spur; a fleshy comb rises at the top of the head, and from the lower part of the beak depend soft fleshy wattles; the region of the cheek is bare. The thick variegated plumage is so prolonged on

the upper tail-corner as to conceal the real tail, over which the flowing feathers fall in graceful sickle-shaped curves. All the members of the group lead a retired life within the recesses of woods and forests, and for this reason we are but little acquainted with any minute details concerning the habits of many species

THE FIRE-BACKED JUNGLE FOWL.

This noble species is larger than the domestic game breed, and stands high on the legs. The spurs are sharp. The head is adorned with a crest of naked shafted feathers, and the bill is partly covered with a purplish skin. The general plumage is black shot with gleaming steel-blue. The lower part of the back is rich flame color.



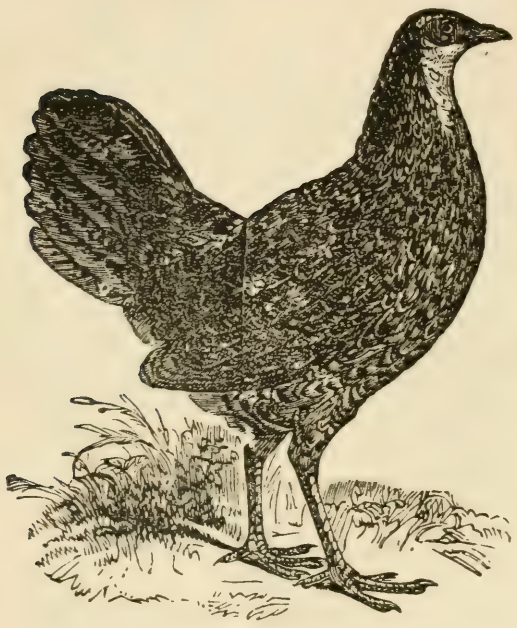
FIRE-BACKED JUNGLE FOWL.

The female is a rich cinnamon brown, mottled with black; throat white, head erected, tail folded. This species came originally from Sumatra, and is highly esteemed by fanciers.

This species was first introduced to science by Sir George Staunton, in his narrative of an "Embassy to China." His host at Batavia, among other interesting specimens of natural history, possessed one of these birds, which was sent to England. The bending feathers of the tail are shorter and much broader than those of the Bankiva, Sonnerat, or Domestic cock. The Fire-backed fowl is intermediate between the largest Jungle fowl, and the domestic game breed. It possesses the quick spirit of all the best game-breeds, and is much prized among the lovers of cock-fighting. Numerous specimens are to be seen in various parts of New England; and at the poultry exhibitions, its elegant form and spirited bearing, together with its beautiful hues, make it an attractive and favorite bird. The hen is considered a very good layer nurse and sitter, and the eggs are a good size.

SONNERAT'S JUNGLE FOWL.

This splendid bird is celebrated for its courage, and is in great request among the cock-fighters of Hindostan. Its port is erect and stately, and its form is admirable. In size it is equal to the domestic fowl; but it is lighter and more graceful. The comb is slightly indented, the wattles are large and double; the markings as represented in the figure. The female is a third less in size than the male.



SONNERAT'S JUNGLE FOWL.

As this species of Jungle fowl is one of the most sought for among the cock fighters of India, a short account of the manner in which that sport is pursued in Hindostan and the island of Polynesia, may not be uninteresting, or out of place. It is from *Ellis' Polynesian Researches.*

"Cocks of the same color are never matched, but a gray against a pile, a yellow against a red, or the like. This might have been originally designed to prevent disputes, or knavish impositions. The Malay breed of cocks is much esteemed by connoisseurs who have had an opportunity of trying them. Great pains is taken in the rearing and feeding; they are frequently handled, and accustomed to spar in public, in order to prevent any shyness. Contrary to our laws, the owner is allowed to take up and handle his cock during the battle; to clear his eye of a feather, or his mouth of blood. When a cock is killed, or runs, the other must have sufficient spirit and vigor left to peck at him three times, on his being held to him for that purpose, or it becomes a drawn battle; and sometimes an experienced cocker will place the head of his vanquished bird in such an uncouth posture, as to terrify the other, and render him unable to give this proof of victory. The cocks are never trimmed, but matched in full feather The artificial spur used in Sumatra, resembles in shape the blade of a scimetar, and proves a more destructive weapon than the European spur. It has no socket, but is tied to the leg, and in the position of it the nicety of the match is regulated As, in horse-racing, weight

proportioned to inches, so, in cocking, a bird of superior size and weight is brought to an equality with his adversary, by fixing the steel spur so many scales of the leg above the natural spur, and thus obliging him to fight with a degree of disadvantage. It rarely happens that both cocks survive the combat.

Some attempts have lately been made by writers on poultry, to defend the sport of cock-fighting, on the ground, that the disposition of the fowl is to fight, and that in training them for that purpose, men only make amusement of that which is necessary. But this is merely an ingenious argument. All such contests have a brutalizing influence on men.

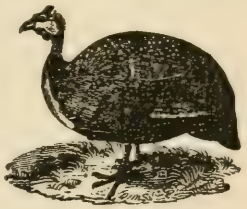
OF THE PINTADO TRIBE.

THE bill is strong and short, and the base is covered with a warty or carunculated cere, which receives the nostrils: on the head there is a horny or callous protuberance. The tail-feathers are short, and bend downward. The feathers of the body are speckled.

The four species of pintado hitherto known are all natives of Africa, and of islands adjacent to the African coast. Their mode of feeding is similar to that of the domestic poultry; they scrape the ground with their feet, in search of insects, worms. and seeds.

THE COMMON GUINEA-FOWL.

In a wild state it is asserted that these birds associate in numerous flocks. Dampier speaks of having seen between two and three hundred of them together, in the Cape de Verd Islands. They were originally introduced into England from the coast of Africa, somewhat earlier than the year 1260.



GUINEA-FOWL.

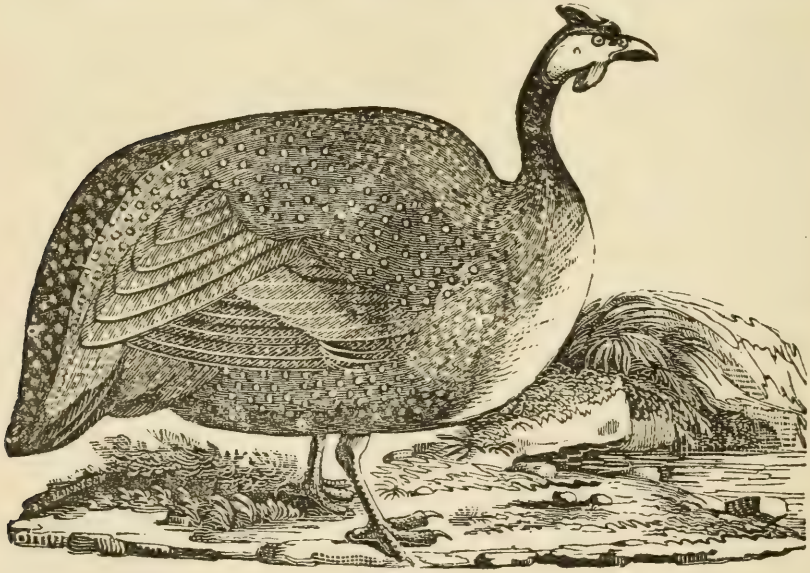
They are now sufficiently common in the poultry-yards of this country; but from the young-ones being difficult to rear, they are not bred in numbers at all equal to those of the domestic poultry. The females lay and hatch their eggs nearly in the same manner as the common hens. The eggs, however, are smaller than those of the hen, and have a harder shell. M. de Buffon states that there is a remarkable difference between the eggs of the domestic Guinea-Fowls, and of those which are wild; the latter being marked with small, round spots, like those on the plumage of the birds; and the former being, when first laid, of a tolerably bright red, and afterwards of the faint color of a dried rose. The young birds, for some time after they come into the world, are destitute of the helmet, or callous protuberance which is so conspicuous on the heads of the old ones.

The voice of the Guinea-Fowl is harsh, and, to some persons, unpleasant. It consists chiefly of two notes, *ca-mac, ca-mac, ca-mac,*

frequently repeated. The Guinea-Fowl is a restless and clamorous bird. During the night it perches on high places; and, if disturbed, alarms every animal within hearing, by its unceasing cry. These birds delight in rolling themselves in the dust, for the purpose, as some naturalists have conjectured, of ridding themselves of insects.

If trained when young, Guinea-Fowls may soon be rendered tame. M. Bruë informs us, that when he was on the coast of Senegal, he received as a present from an African princess, two Guinea-Fowls. Both these birds were so familiar, that they would approach the table and eat out of his plate; and when they had liberty to fly about upon the beach, they always returned to the ship, when the dinner or supper bell rang.

It is even said that the wild birds will sometimes receive food from



GUINEA-FOWL.

the hand, almost immediately after they are caught. These delight chiefly in marshy and morassy places, where they subsist almost wholly on insects, worms, and seeds. Guinea-Fowls are found in nearly all the countries of the western part of Africa, from Barbary, southward, to the Cape of Good Hope. They are natives likewise of the Islands of France and Bourbon, of Madagascar and Cape de Verd.

Amongst the Romans they were in great repute for the table; and, on account of their scarcity, were generally sold for high prices. They are at present much esteemed in this country, their flavour being considered, by some persons, to resemble that of the Pheasant. The eggs are a very delicate food.

OF THE GROUSE IN GENERAL.

THE Grouse have strong, convex bills; and some of the species have a naked scarlet skin above each eye. The flesh of all the species is brown, but is excellent food.

The birds of this tribe which are known in Great Britain, are the different species of Grouse, Partridges, and Quails. Of these, the Grouse are inhabitants chiefly of bleak and mountainous tracts of country. To defend them from the effects of cold, their legs are feathered down to the toes. The nostrils are small, and are hidden under the feathers. Their legs are stout, and the tail generally long. Partridges and Quails in habit the warmer and more cultivated parts of the country. Their tail is short, and their nostrils are covered with a hard prominent margin.



THE GROUSE.

THE RUFFED GROUSE.

The size of this bird is between that of a Pheasant and Partridge. The bill is brownish. The head is crested; and as well as all the upper parts, is variegated with different tints of brown mixed with black. The feathers on the neck are long and loose; and may be erected at pleasure, like those of the cock. The throat and the fore part of the neck are orange brown; and the rest of the under parts are yellowish white, having a few curved marks on the breast and sides. The tail consists of eighteen feathers, all of which are crossed with narrow bars of black, and with one broad band of the same near the end. The legs are covered to the toes (which are flesh-colored, and pectinated on the sides) with whitish hairs.

This beautiful species of Grouse, known by the name of *Pheasant* in the Middle and Western States, and by that of *Partridge* in New England, is found to inhabit the continent from Hudson's Bay and the parallel of 56° to Georgia, but are most abundant in the Northern and Middle States, where they often prefer the most elevated and wooded districts; and at the south they affect the mountainous ranges of valleys which border upon, or lie within the chains of the Alleghanies. They are also prevalent in the Western States as far as the line of the State of Mississippi, and though not found on the great western plains they appear in the forests of the Rocky Mountains, and follow the Columbia nearly to the Pacific.



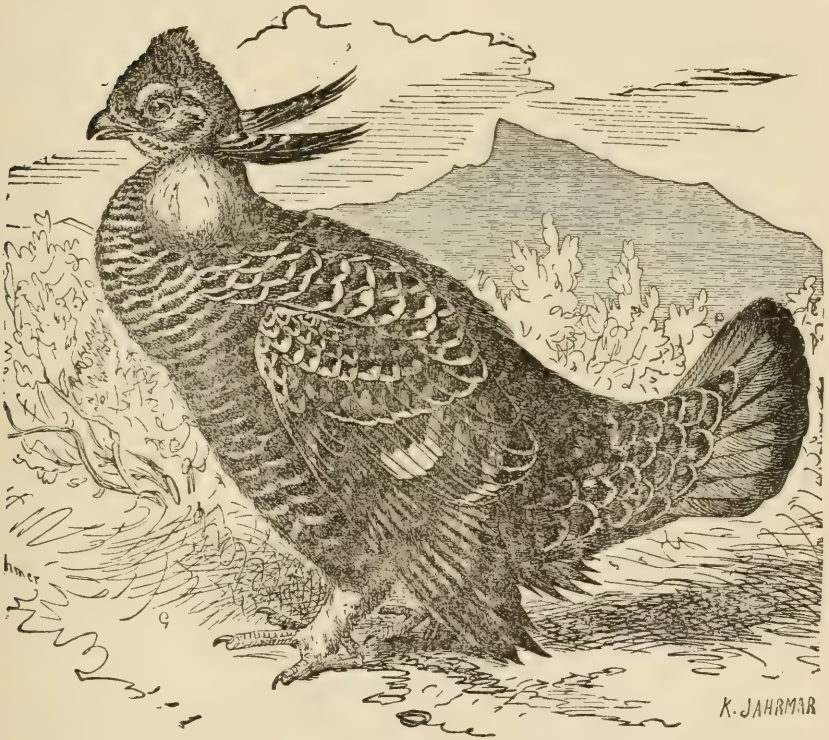
RUFFED GROUSE.

Although, properly speaking, sedentary, yet at the approach of autumn, they make partial migrations by single families in quest of a supply of food. In the northern parts of New England, at the approach of winter, they leave the hills for lower and more sheltered situations.

He is a fine bird when his gaiety is displayed; that is, when he spreads his tail like that of a Turkey-cock, and erects the circle of feathers round his neck like a ruff, walking with a stately and even pace, and making a noise somewhat like that of a Turkey. This is the moment which the sportsman seizes to fire at him, for, if the bird observes that he is discovered, he immediately flies off to a distance of several hundred yards before he again alights.

There is something very remarkable in what is called the *thumping* of these birds. This they do, as the sportsmen tell us, by clapping their wings against their sides. They stand upon an old fallen tree, and in this station they begin their strokes gradually, at about two seconds of time from another, and repeat them quicker and quicker, until they make a noise not unlike distant thunder. This continues, from the beginning, about a minute; the bird ceases for six or eight minutes, and then begins again. The sound is often heard at the distance of nearly half a mile; and sportsmen take advantage of this note, to discover the birds, and shoot them. The Grouse commonly practise their *thumping* during the spring and fall of the year, at about nine or ten o'clock in the morning, and four or five in the afternoon

These birds lay their eggs, from twelve to sixteen in number, in nests which they make either by the side of fallen trees, or the roots of standing ones. Mr. Brooke, when a boy, says that he has found their nests, and has endeavored to take the old birds, but never could succeed. The sitting bird would let him put his hand almost upon her before she would quit her nest; then by artifice would draw him off from her eggs, by fluttering just before him for a hundred paces or more, so that he has been in constant hopes of taking her. When the nestlings are hatched, and a few days old, they hide themselves so artfully among the leaves, that it is difficult to find them.



THE PRAIRIE HEN.

THE PINNATED GROUSE, OR PRAIRIE HEN.

This species, celebrated for the exquisite flavor of its flesh, is strictly confined to the western prairies of our country, open dry plains interspersed with shrub-oak being its favorite haunts. The male is remarkable for a naked sacculated appendage on each side of the neck, resembling a large orange. In severe weather the Prairie Hens sometimes mix with the domestic poultry in pursuit of food.

THE BLACK GROUSE.

The weight of an old black cock is nearly four pounds; but that of the female is not often more than two. The plumage of the whole body of the male is black, and glossed over the neck and rump with a shining blue. The coverts of the wings are of a dusky brown: the four first quill-feathers are black, the next white at the bottom. The lower half, and the tips, of the secondary feathers, are white. The inner coverts of the wings are white. The tail is much forked: the exterior feathers bend greatly outward, and their ends seem as if cut off. The colors of the female differ considerably from those of the male: the tail also is but slightly forked.



BLACK GROUSE.—MALE.

They are partial to mountainous and woody situations, far removed from the habitations of men.

Their food is various; but principally consists of the mountain fruits and berries, and, in winter, of the tops of heath. It is somewhat remarkable that cherries and peas are fatal to these birds. They perch and roost in the same manner as the Pheasant.

The Black Grouse never pair; but in spring the males assemble at their accustomed resorts on the tops of heathy mountains, where they *crow* and *clap their wings.* The females, at this signal, resort to them. The males are very quarrelsome, and fight together like game-cocks. On these occasions they are so inattentive to their own safety, that two or three have sometimes been killed at one shot: and instances have occurred of their having been knocked down with a stick.

The female forms an artless nest on the ground; and lays six or eight eggs, of a dull yellowish white color, marked with numerous very small ferruginous specks, and, towards the smaller end, with some blotches of the same. These are hatched late in the summer. The young males quit the parents in the beginning of winter, and keep together in flocks of seven or eight till the spring.

In Russia, Norway, and other extreme northern countries, the Black Grouse are said to retire under the snow during winter. The shooting of them in Russia is thus conducted:—Huts full of loop-holes, like little forts, are built for the purpose, in woods frequented by these birds. Upon the trees within shot of the huts, are placed artificial decoy-birds. As the Grouse assemble, the company fire through the openings; and so long as the sportsmen are concealed, the report of the guns does not frighten the birds away. Several of them may therefore be killed from the same tree, when three or four happen to be perched on branches one above another. The sportsman has only to shoot the undermost bird first, and the others upward in succession. The uppermost bird is earnestly employed in looking down after his fallen companions, and keeps chattering to them till he becomes himself a victim.



BLACK GROUSE.—FEMALE.

During winter the inhabitants of Siberia take these birds in the following manner:—A number of poles are laid horizontally on forked sticks, in the open birch forests. Small bundles of corn are tied on these, by way of allurement; and, at a little distance, some tall baskets of conical shape are placed, having their broad parts uppermost. Within the mouth of each basket is placed a small wheel; through which passes an axis so nicely fixed, as to admit it to play very readily, and, on the least touch either on one side or the other, to drop down, and again recover its situation. The Black Grouse are soon attracted by the corn on the horizontal poles. The first comers alight upon them, and after a short repast fly to the baskets, and attempt to settle on their tops, when the wheel drops sideways, and they fall headlong into the trap. These baskets are sometimes found half-full of birds thus caught.

THE RED GROUSE, OR RED GAME.



THE RED GROUSE

The weight of the male is about nineteen and of the female fifteen ounces. The bill is black; and at the base of the lower mandible there is on each side a white spot. Each eye is arched with a large, naked, scarlet spot. The throat is red. The plumage of the upper parts of the body is mottled with dusky red and black. The breast and belly are purplish, crossed with small dusky lines.

COCK OF THE PLAINS.

This large and beautiful species of Grouse, little inferior to the Turkey in size, and the American counterpart of the Cock of the Woods, was first seen by Lewis and Clarke in the wild recesses within the central chains of the Rocky Mountains, from whence they extend in accumulating numbers to the plains of the Columbia, and are common throughout the Oregon Territory, as well as the neighboring province of California.

The flight of this large bird is slow, unsteady, and attended with a whirring sound, the wings being kept in a hurried motion, as in most other Grouse. It also runs much on the ground in the manner of the Turkey, and is not very partial to taking wing. Their starting cry, like that of the common Pheasant, is a sort of *'kuk, 'kuk, 'kuk.* They begin to pair in March and April; and at this time repair to eminences on the banks of streams where they are seen assembled about sun-rise. The male lowers his wings, and produces a humming sound as he trails his outspread pinions on the ground; the tail, at the same time, is spread out like a fan, and the bare space on the breast is also accompanied by a large inflation. He then struts proudly in the presence of his intended mate, uttering a confused and disagreeable *'hurr-hurr-r-r-r-hoo'* ending in a deep and hollow tone, like the sound produced by blowing into a cane. They nest on the ground under the shelter of low bushes, or near streams among the wild Canary Grass of this region. The nest is made of dry grass and slender twigs. The eggs, from thirteen to seventeen, about the size of those of the domestic fowl, are of a wood brown color, with irregular chocolate blotches at the thick end. The period of incubation extends from twenty-one to twenty-two days; and as in other birds of this active tribe the young run about and quit the nest in few hours after being hatched. In summer and autumn, these large Grouse are seen only in small numbers, pairs or families, but in winter and spring, partially migratory, they are then seen in flocks of several hundreds, roaming about in

quest of food. They are plentiful throughout the barren and arid plains of the Columbia, as well as in the interior of North California, but are nowhere seen to the east of the Rocky Mountains.

THE WHITE GROUSE, OR PTARMIGAN.

The Ptarmigan is somewhat larger than a Pigeon. Its bill is black; and its plumage, in summer, is of a pale brown color, elegantly mottled with small bars and dusky spots. The head and neck are marked with broad bars of black, rust-color, and white. The wings and belly are white.

These birds moult in the winter months, changing at this season their summer dress for one more warm; and, instead of having their feathers of many colors, they then become white. By a wonderful provision, every feather also, except those of the wings and tail, becomes double; a downy one shooting out at the base of each, which gives an additional protection against the cold.

Their feet, by being feathered entirely to the toes, are well protected from the cold. Every morning the birds take a flight directly upward into the air, apparently to shake the snow from their wings and bodies. They feed in the mornings and evenings, and in the middle of the day they bask in the sun.

About the beginning of October the Ptarmigans assemble in flocks of a hundred and fifty or two hundred, and live much among the willows, the tops of which they eat. In December they retire from the flats about Hudson's Bay to the mountains, to feed on the mountain berries. Some of the Greenlanders believe that Ptarmigans, in order to provide a subsistence through the winter, collect a store of mountain berries into some crevice of a rock near their retreat; and it is generally supposed, that, by means of their long, broad, and hollow nails, they form lodges under the snow, where they lie in heaps to protect themselves from the cold. During winter they are often seen flying in great numbers among the rocks.

Though sometimes found in the mountains of the north of Scotland, the Ptarmigans are chiefly inhabitants of that part of the globe which lies about the Arctic Circle. Their food consists of the buds of trees, young shoots of pine and heath, and of fruits and berries which grow on the mountains. They are so stupid and silly, as often to suffer themselves, without the least difficulty, to be knocked on the head, or to be driven into any snare that is set for them. They frequently stretch out their neck, apparently in curiosity, and remain otherwise unconcerned, while the fowler takes aim at them. When frightened, they fly off; but immediately afterwards they alight, and stand staring at their foe. If the hen bird be killed, it is said that the male will not forsake her, but may then also be killed. So little alarmed are these birds at the presence of mankind, as even to bear driving like poultry; yet, notwithstanding this apparent gentleness of disposition, it is impossible to domesticate them; for when caught they refuse to eat, and they always die soon afterwards.

Their voice is very extraordinary: and they do not often exert it except in the night. Ptarmigans are seldom found in Sweden; and one of these birds, several years ago, happening to stray within a hundred miles of Stockholm, very much alarmed the common people of the neighborhood; for, from its nightly noise, a report was circulated that the wood, where it had taken up its residence, was haunted by a ghost. So much were the people terrified by this supposed sprite, that, for a considerable time, nothing could tempt the post-boys to pass the wood after dark. The spirit, however, was at last removed, by a gamekeeper shooting the bird.

Ptarmigans form their nests on the ground, in dry ridges; and lay from six to ten dusky eggs with reddish-brown spots.

The usual method of catching these birds is by nets made of twine twenty feet square, connected to four poles, and propped with sticks in front. A long line is fastened to these, the end of which is held by a person who lies concealed at a distance. Several people drive the birds within reach of the net; which is then pulled down, and is often found to cover fifty or sixty of them. Ptarmigans are in such plenty in the northern parts of America, that upwards of ten thousand are frequently caught for the use of the Hudson's Bay Settlement, between November and May.

The Laplanders catch these birds by means of a hedge formed with the branches of birch-trees, and having small openings, at certain intervals, with a snare in each. The birds are tempted to feed on the buds and catkins of the birch; and whenever they endeavor to pass through the openings, they are instantly caught.

They are excellent food; and in taste are so like the common grouse, as to be scarcely distinguishable from it.

THE PARTRIDGE.

The extremes of heat and cold are alike unfavorable to the propagation of the Partridge. This bird also flourishes best in cultivated countries being principally on the labors of the husbandman. In Sweden Partridges burrow beneath the snow; and the whole covey crowd together under this shelter, to guard against the in-



PARTRIDGES.

tense cold. In Greenland, the Partridge is brown during summer; but as soon as the winter sets in, it becomes clothed with a thick and warm down, and its exterior feathers assume the color of the snow.

Partridges have ever held a distinguished place at the tables of the luxurious, both in Europe and America. We have an old distich:

> "If the Partridge had the Woodcock's thigh,
> 'Twould be the best bird that e'er did fly."

They pair about the third week in February; and sometimes, after pairing, if the weather be very severe, they collect together, and again form into coveys. In May the female lays her eggs, usually from fifteen to eighteen in number, in a rude nest of dry leaves and grass, formed upon the ground; these are of a greenish-gray color. The period of incubation is three weeks. So closely do these birds sit on their eggs when near hatching, that a Partridge with her nest has been carried in a hat to some distance, and in confinement has continued her incubation, and there produced young-ones. The great hatch is about the first ten days in June; and the earliest birds begin to fly towards the latter end of that month. The young brood are able to run about as soon as they are hatched, and they are even sometimes seen encumbered with a piece of the shell sticking to them. The parents immediately lead them to ant-hills, on the grubs of which insects they at first principally feed.

At the season when the Partridge is produced, the various species of Ants loosen the earth about their habitations. The young birds, therefore, have only to scrape away the earth, and they can satisfy their hunger without difficulty. A covey that some years ago excited the attention of the Rev. Mr. Gould, gave him an opportunity of remarking the great delight which they take in this kind of food. On his turning up a colony of Ants, and withdrawing to some distance, the parents conducted their young ones to the hill, and fed very heartily. After a few days they grew more bold, and ventured to eat within twelve or fourteen yards of him. The surrounding grass was high; by which means they could, on the least disturbance, immediately run out of sight and conceal themselves. This is an excellent food for Partridges that are bred up under a domestic hen; if constantly supplied with Ants' grubs and fresh water, the birds seldom fail to arrive at maturity. Along with the grubs it is recommended to give them, at intervals, a mixture of millepedes, or wood-lice, and earwigs; fresh curds mixed with lettuce, chickweed, or groundsel, should also be given them.

The affection of Partridges for their offspring is peculiarly interesting. Both the parents lead them out to feed; they point out to them the proper places for their food, and assist them in finding it by scratching the ground with their feet. They frequently sit close together, covering the young-ones with their wings; and from this protection they are not easily roused. If, however, they are disturbed, most persons acquainted with rural affairs know the confusion that

ensues. The male gives the first signal of alarm, by a peculiar cry of distress; throwing himself at the same moment more immediately into the way of danger, in order to mislead the enemy. He flutters along the ground, hanging his wings, and exhibiting every symptom of debility. By this stratagem he seldom fails of so far attracting the attention of the intruder, as to allow the female to conduct the helpless, unfledged brood into some place of security. "A Partridge (says Mr. White, who gives an instance of this instinctive sagacity) came out of a ditch, and ran along shivering with her wings, and crying out as if wounded and unable to get from us. While the dam feigned distress, a boy who attended me saw the brood, which was small and unable to fly, run for shelter into an old fox-hole, under the bank." Mr. Marwick relates, that "once as he was hunting with a young Pointer, the dog ran on a brood of very small Partridges. The old bird cried, fluttered, and ran tumbling along just before the dog's nose, till she had drawn him to a considerable distance; when she took wing and flew further off, but not out of the field. On this the dog returned nearly to the place where the young-ones lay concealed in the grass; this the old bird no sooner perceived than she flew back again, settled just before the dog's nose, and a second time acted the same part, rolling and tumbling about till she drew off his attention from her brood, and thus succeeded in preserving them." This gentleman says also that, when a Kite was once hovering over a covey of young Partridges, he saw the old birds fly up at the ferocious enemy, screaming and fighting with all their might to preserve their brood.

The eggs of the Partridge are frequently destroyed by Weasels, Stoats, Crows, Magpies, and other animals. When this has been the case, the female frequently makes another nest and lays afresh. The produce of these second hatchings are those small birds that are not perfectly feathered in the tail till the beginning of October. This is always a puny, sickly race,; and the individuals seldom outlive the rigors of the winter.

It is said that those Partridges which are hatched under a domestic hen, retain through life the habit of *calling* whenever they hear the clucking of hens.

The Partridge, even when reared by the hand, soon neglects those who have the care of it; and, shortly after its full growth, altogether estranges itself from the house where it was bred. This will almost invariably be its conduct, however intimately it may have connected itself with the place and inhabitants in the early part of its existence. Among the few instances of the Partridge's remaining tame, was that of one reared by the Rev. Mr. Bird. This, long after its full growth, attended the parlor at breakfast and other times, received food from any hand that gave it, stretched itself before the fire, and seemed much to enjoy the warmth. At length, it fell a victim to that foe of all favorite birds, a cat.

On the farm of Lion Hall, in Essex, belonging to Colonel Hawker, a Partridge, in the year 1788, formed her nest, and hatched sixteen eggs, *on the top of a pollard oak-tree.* What renders this circumstance

the more remarkable is, that the tree had, fastened to it, the bars of a stile, where there was a footpath; and the passengers, in going over discovered and disturbed her before she sat close. When the brood was hatched, the birds scrambled down the short and rough boughs, which grew out all around from the trunk of the tree, and reached the ground in safety.

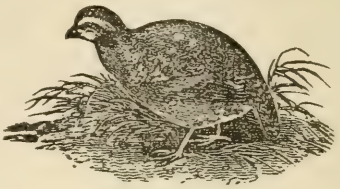


CALIFORNIA PARTRIDGE.

In the year 1798, the following occurrence took place at East Dean in Sussex, which will tend to prove that Partridges have no powers of migration. A covey of sixteen Partridges, having been disturbed by some men at plough, directed their flight across the cliff to the sea, over which they continued their course about three hundred yards. Either intimidated, or otherwise affected by that element, the whole were then observed to drop into the water. Twelve of them were soon afterwards floated to shore by the tide, where they were picked up by a boy, who carried them to Eastbourn for sale.

It has long been a received opinion among sportsmen, as well as among naturalists, that the female Partridge has none of the bay feathers of the breast like the male. This, however, on dissection, has proved to be a mistake; for Mr. Montagu happening to kill nine birds in one day, with very little variation as to the bay mark on the breast, he was led to open them all, and discovered that five of them were females. On carefully examining the plumage, he found that the males could only be known by the superior brightness of color about the head; which alone, after the first or second year, seems to be the true mark of distinction.

The California Quail is a beautiful species with a small feather by way of crest on its head.



CALIFORNIA PARTRIDGE.

THE QUAIL.

The bill of this bird is of a dusky color. The feathers of the head are black, edged with a rusty brown. The crown of the head is divided by a whitish yellow line, beginning at the bill, and running along the hind part of the neck to the back. Above each eye there is another line of similar color. The chin and throat are of a dirty white. The cheeks are spotted with brown and white. The breast is of a pale yellowish red, spotted with black. The scapular feathers, and those on the back, are marked in the middle with a long, pale, yellow line; and on their sides with ferruginous and black bars. The coverts of the wings are reddish brown, elegantly barred with paler lines, bounded on each side with black. The exterior side of the first quill-feathers is white; and of the others, dusky spotted with red.

These birds generally sleep during the day, concealed in the tallest grass; lying on their sides, with their legs extended. So very indolent are these birds, that a Dog must absolutely run upon them before they are flushed; and when they are forced upon wing, they seldom fly far. Quails are easily drawn within reach of a net, by a call imitating their cry, which is not unlike the words *whit, whit, whit:* this is done with an instrument called a quail-pipe.

Quails are found in several parts of Great Britain; and the time of their migration from there is August or September. They are supposed to winter in Africa; and they return early in the spring. At their arrival in Alexandria, such multitudes are exposed in the markets for sale, that three or four may sometimes be bought for a medina (a coin less than three farthings in value.) Crews of merchant-vessels have been fed upon them; and complaints have sometimes been laid at the consul's office, by mariners against their captains, for giving them nothing but Quails to eat.

With wind and weather in their favor, these birds have been known, in the course of one night, to perform a flight of fifty leagues across the Black Sea; a wonderful distance for so short-winged a bird.

Such prodigious numbers of Quails have sometimes appeared on



QUAILS AND THEIR YOUNG.

the western coasts of the kingdom of Naples, that a hundred thousand have, in one day, been caught within the space of three or four miles. Most of these are taken to Rome, where they are in great request, and are sold at high prices. Clouds of Quails also alight, in spring, along the coasts of Provence: especially in the lands belonging to the bishop of Frejus, which border on the sea. Here they are sometimes found so exhausted, that for a few of the first days they may be caught with the hand. In some parts of the south of Russia they abound so greatly, that at the time of their migration they are caught by thousands, and sent in casks to Moscow and Petersburg.

With respect of these birds having an instinctive knowledge of the precise time for emigration, we have a singular fact in some young Quails, which, having been bred in cages from the earliest period of their lives, had never enjoyed, and therefore could not feel, the loss of liberty. For four successive years they were observed to be restless, and to flutter with unusual agitations, regularly in September and April; and this uneasiness lasted thirty days each time. It began constantly an hour before sun-set. The birds passed the whole night in these fruitless struggles; and always on the following day appeared dejected and stupid.

Quails are birds of undaunted courage; and their quarrels often terminate in mutual destruction. This irascible disposition induced the ancient Greeks and Romans to fight them with each other, as the moderns do game-cocks. And such favorites were the conquerors, that in one instance Augustus punished a præfect of Egypt with death for having brought to his table one of these birds which had acquired celebrity for its victories. The fighting of Quails is even now a fashionable diversion in China, and in some parts of Italy.

OF THE BUSTARDS IN GENERAL.

THE Bustards have a somewhat convex bill, with open and oblong nostrils. Their legs are long, and naked above the knees. The feet have only three toes, all placed forward.

There are about twelve different species of Bustards, nearly all of which are inhabitants of the Old Continent.



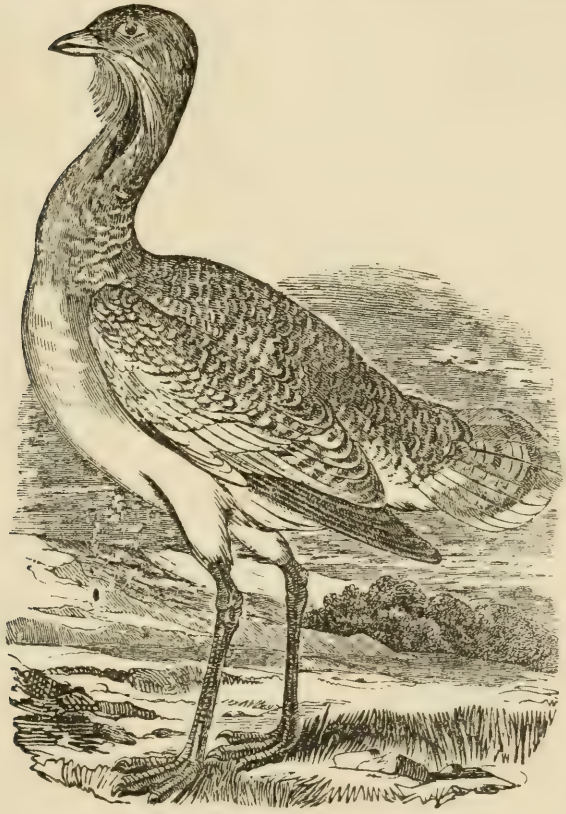
THE GREAT BUSTARD.

This is one of the largest land-fowl, the male sometimes weighing twenty-five pounds and upwards. The length is nearly four feet, and the breadth nine. The head and neck are ash-colored. The back is

transversely barred with black, and bright rust-color. The belly is white: and the tail, consisting of twenty feathers, is barred with red and black. The legs are dusky. On each side of the lower mandible of the bill there is a tuft of feathers about nine inches long.

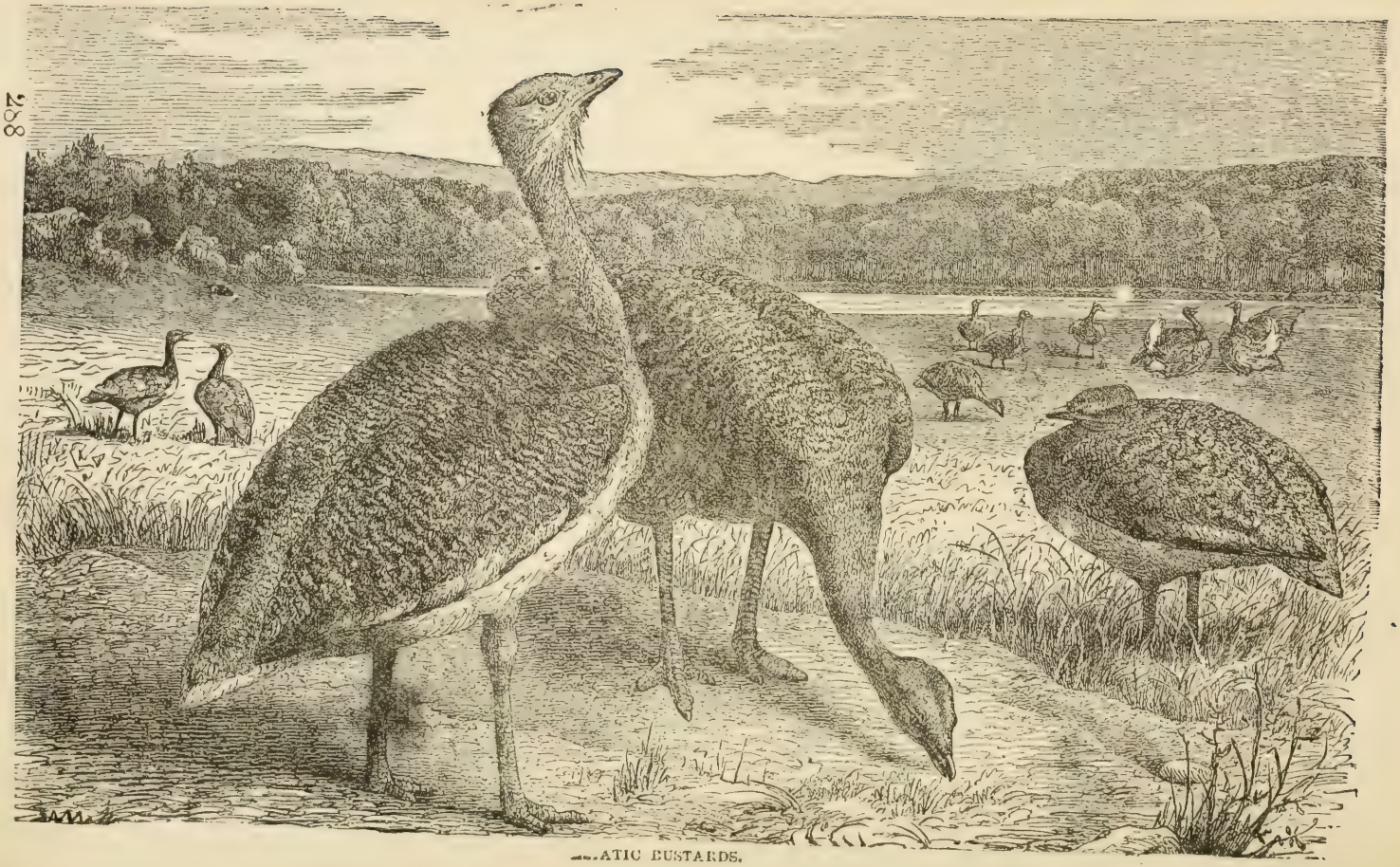
The female is not much more than half the size of the male. The top of her head is of a deep orange, and the rest of the head brown. Her colors are not so bright as those of the male, and she wants the tuft on each side of the head.

There is one very essential distinction between the male and the female of this species. The former is furnished with a sac or pouch, situated in the fore part of the neck, and capable of containing more than two quarts of water. The entrance to this pouch is immediately under the tongue. This singular reservoir was first discovered by Dr. Douglass, who supposes that the bird fills it with water, to supply its thirst in the midst of those extensive plains where it is accustomed to wander. The Bustard likewise makes a further use of it, in defending itself against the attacks of birds of prey: on these occasions it throws out the water with such violence, as not unfrequently to baffle the pursuit of its enemy.



GREAT BUSTARD.—MALE.

This bird makes no nest, but the female lays her eggs in some hollow place of the ground, in a dry corn field; these are two in number, as big as those of a goose, and of a pale olive brown, marked with spots of a deeper color. If, during her absence from the nest, any one handle or even breathe upon the eggs, she immediately abandons them. The young ones follow the dam soon after they are excluded from the egg, but they are not capable for some time of flying.



—ATIC BUSTARDS.

Bustards feed on green corn, the tops of turnips, and other vegetables as well as on worms: and they have been known to eat Frogs, Mice, and also young birds. They are remarkable for their great timidity; they carefully avoid mankind, and are easily driven away in whole herds by the smallest dog.



GREAT BUSTARD.—FEMALE.

In England these birds are now and then met with: they frequent the open countries of the south and east parts, from Dorsetshire, as far as the wolds in Yorkshire; and are sometimes, though rarely, seen on Salisbury Plain. They are slow in taking wing, but run with great rapidity; and the young ones are sometimes coursed and taken by Greyhounds, which are conveyed towards them in covered carts until such time as they evince symptoms of alarm and begin to move off, when the dogs are slipped from their couplings. Of wayfaring people, however, it seems to have little apprehension; the usual plan, therefore, is for the sportsman to clothe himself like a peasant, and to make up to it with a basket on his back, holding his gun closely by his side.

THE LITTLE BUSTARD.

Unlike the larger species the Little Bustard is not restricted to flat and open districts, but frequently inhabits mountainous regions. Although closely resembling the species last described in many respects, it yet differs from it considerably in the ease and comparative lightness of its movements. Its gait is more graceful and its flight more swift and capable of being long sustained. In disposition it is cautious, but by no means so shy as the Great Bustard; if disturbed it seeks safety by squatting close to the ground among the grass or brushwood.

OF THE TRUMPETERS.

THE bill is moderately long, having the upper mandible a little convex. The nostrils are oblong, sunk, and pervious. The tongue is cartilaginous, flat, and fringed at the tip. The legs are naked a little above the knees; and the toes are placed three before and one behind.

This singular tribe, of which only two species have yet been discovered stands arranged, even in Gmelin's edition of the Systema Naturæ, among the birds of the ensuing order, the *Waders;* but both in its formation and habits it differs so materially from the whole of that order, that I have not hesitated in placing it among the gallinaceous birds.

THE GOLD-BREASTED TRUMPETER,



THE GOLD-BREASTED TRUMPETER.

The length of this bird is about twenty-two inches; and its legs are five inches high, and completely covered with small scales, which reach two inches above the knee. Its general plumage is black: and the feathers of the head and neck are very short and downy; those of the fore part of the neck, and upper part of the breast, of a glossy gilded green, with a reflection of blue in some lights. The feathers between the shoulders are rust-colored, changing into a pale ash-color as they pass downward. They are loose and silky Those of the scapulars are long, and hang over the tail, which is very short, and consists of twelve blackish feathers. The legs are greenish; and the bill is yellowish green, having the nostrils pervious.

The most characteristic and remarkable property of the Gold-breasted Trumpeters consists in the singular noise which they often make either of their own accord, or when urged by their keepers. To induce one of the birds to this, it is sometimes necessary to entice it with a bit of bread to come near; and then, making the same kind of sound, which the keepers can well imitate, the bird will frequently be disposed to repeat it. The Gold-breasted Trumpeter, when tamed, distinguishes its master and benefactor with marks of affection.—"Having (says Vosmaër) reared one myself, I had an opportunity of experiencing this. When I opened its cage in the morning, the animal hopped round me, expanding his wings, and *trumpeting*, as if to wish me good morning. He showed equal attention when I went out and returned. No sooner did he perceive me at a distance, than he ran to meet me; and even when I happened to be in a boat, and set my foot on shore, he welcomed me with the same compliments, which he reserved for me alone, and never bestowed upon others.

The Trumpeter is easily tamed, and always becomes attached to its benefactor. When bred up in the house, it loads its master with caresses, and follows his motions; and, if it conceive a dislike to persons on account of their forbidding figure, or of injuries received, it will pursue them sometimes to a considerable distance, biting their legs, and testifying every mark of displeasure. It obeys the voice of its master, and even answers to the call of others to whom it bears no ill-will. It is fond of caresses, and offers its head and neck to be stroked; and if once accustomed to these familiarities, it becomes troublesome, and will not be satisfied without continual fondling. It makes its appearance as often as its master sits down to table, and begins by driving out the dogs and cats from the room; for it is so obstinate and bold, that it never yields, but, often, after a tough battle, will put even a middle-sized dog to flight. It avoids the bites of its antagonist by rising in the air; and retaliates with violent blows of its bill and claws, aimed chiefly at the eyes. After it gains the superiority, it pursues its victory with the utmost rancor, and if not taken off, will destroy the fugitive. By its intercourse with man, its instincts become moulded like those of dogs; and we are assured that it can be trained to attend a flock of sheep. It even shows a degree of jealousy of its human rivals; for when at table, it bites fiercely the naked legs of the negroes and other domestics who approach its master.

Nearly all these birds have a habit of following people through the streets, and out of town; even those whom they have never seen before. It is difficult to get rid of them; if a person enter a house, they will wait his return, and again join him, though after an interval of two or three hours. I have sometimes, (says M. de la Borde) betaken myself to my heels; but they ran faster, and always got before me; and when I stopped they stopped also. I know one that invariably follows all the strangers who enter its master's house, accompanies them into the garden, takes as many turns there as they do, and attends them back again.

In a state of nature this bird inhabits the arid mountains and upland forests of South America; never visiting the clear grounds, nor the settlements. It associates in numerous flocks. It walks and runs, rather than flies; for it never rises more than a few feet from the ground, and then only to reach some short distance, or to gain some low branch. It feeds on wild fruits; and, when surprised in its haunts, makes its escape by the swiftness of its feet, at the same time emitting a shrill cry not unlike that of a Turkey.

It walks out alone without any danger of losing itself, and it is asserted that it will drive ducks and fowls to their feeding-place in the morning and bring them home at night, carefully collecting any stragglers. As for the bird itself it is never shut up, but sleeps just where it pleases, upon the roof of a barn or in the farmyard. Its trumpeting is described as resembling the sound produced by a person endeavoring to pronounce "tou, tou, tou; tou, tou, tou," with his mouth shut, or the doleful noise made by the Dutch bakers, who blow a glass trumpet to inform their customers when their bread is taken out of the oven.

OF THE OSTRICHES IN GENERAL.

In the Ostriches, the bill is straight and depressed. The wings are small in proportion to the size of the body, and altogether useless for flight. The legs are naked above the knee: the number of toes, in one species, is two, and in the remaining species three; and these are placed forwards.



OSTRICH HUNT.

THE BLACK, OR GREAT OSTRICH.

This Ostrich stands so high as to measure from seven to nine feet from the top of the head to the ground. From the back, however, it is seldom more than three or four feet, the rest of its height being made up by its extremely long neck. The head is small; and, as well as the greater part of the neck, is covered only with a few scattered hairs. The feathers of the body are black and loose; those of the wings and tail are of a snowy white, waved, and long, having here and there a tip of black. The wings are furnished with spurs. The thighs and flanks are naked; and the feet are strong, and of a gray-brown color. The foot of the Ostrich is not a little remarkable. It is divided into two toes only, and each toe, well padded beneath, is armed at the extremity with what may be properly called a hoof. The whole strongly resembles the foot of the camel.

The sandy and burning deserts of Africa and Asia are the only native residences of the Black Ostriches. Here these birds are seen in flocks, so extensive as sometimes to have been mistaken for distant cavalry.

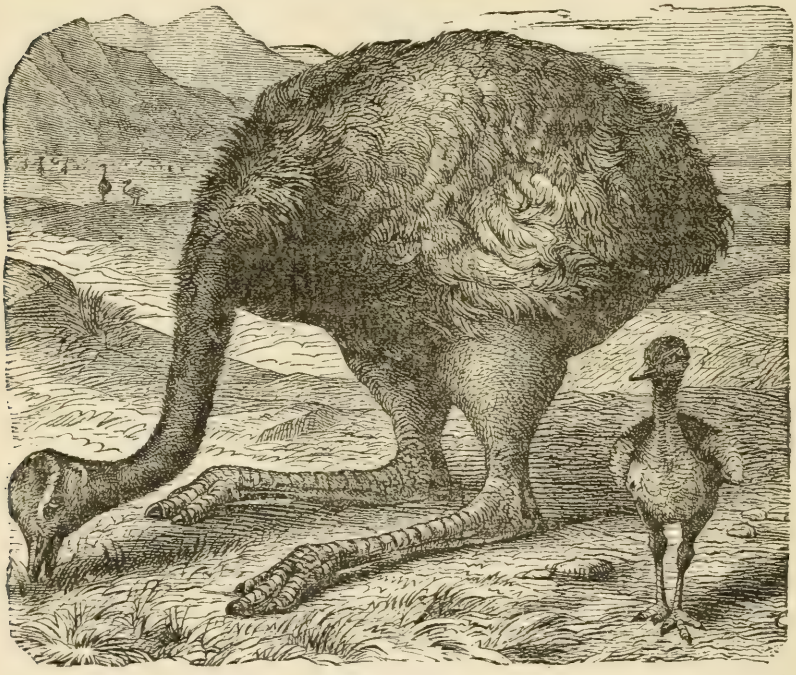
There are many circumstances in the economy of the Ostrich, which differ from those of the feathered race in general. This bird seems to form one of the links of union in the great chain of nature, connecting the winged with the four-footed tribes. Its strong-jointed legs, and (if I may venture so to call them) cloven hoofs, are well adapted both for speed and for defence. Its wings are insufficient to raise it from the ground: its camel-shaped neck is covered with hair: its voice is a kind of hollow, mournful lowing: and it grazes on the plain with the Quagga and the Zebra.

Ostriches are frequently injurious to farmers in the interior of Southern Africa, by coming in flocks into their fields, and destroying the ears of wheat so effectually, that in a large tract of land they sometimes leave nothing but the mere straw behind. The body of the bird is not higher than the corn; and when it devours the ears, it bends down its long neck, so that at a little distance it cannot be seen; but on the least noise it rears its head, and generally contrives to escape before the farmer gets within gun-shot of it.

When the Ostrich runs, it has a proud and haughty appearance; and, even when in extreme distress, never appears in great haste, especially if the wind be with it. Its wings are frequently of material use in aiding its escape; for, when the wind blows in the direction that it is pursuing, it always flaps them. In this case the swiftest horse cannot overtake it: but if the weather be hot, and there be no wind, the difficulty of out-running it is not so great.

Ostriches are polygamous birds; one male being seen with two or three, and sometimes with five females. It has been commonly believed, that the female Ostrich, after depositing her eggs in the sand, and there covering them up, trusts them to be hatched by the heat of the climate, and leaves the young-ones to provide for themselves. Even the author of the book of Job alludes to this popular notion respecting

the Ostrich, " which leaveth her eggs in the earth, and warmeth them in the dust; and forgetteth that the foot may crush them, or that the wild beast may break them. She is hardened against her young-ones, as though they were not hers: her labor is in vain, without fear, because God has deprived her of wisdom, neither hath he imparted to her understanding." Recent travellers have, however, assured us that no bird has a stronger affection for her offspring than this, and that none watches her eggs with greater assiduity. But though she sometimes leaves them by day, she always carefully broods over them by night; and Kolben, who saw great numbers of Ostriches at the Cape of Good Hope, affirms, that they sit on their eggs like other



OSTRICH FEEDING.

birds, and that the males and females take this office by turns, as he had frequent opportunities of observing. Nor is it more true that they forsake their young-ones as soon as they are excluded from the shell. On the contrary, these are not able to walk for several days after they are hatched. During this time the parents are very assiduous in supplying them with grass and water, and will encounter every danger in their defence. The females which are united to one male deposit all their eggs in the same place, to the number of ten or twelve each: these they hatch altogether, the male also taking his turn of sitting on them. Between sixty and seventy eggs have sometimes been found in one nest. The time of incubation is six weeks

M. Le Vaillant informs us, that, in Africa, he started an Ostrich from its nest, where he found eleven eggs quite warm: he also found four others at a little distance. Those in the nest had young-ones in in them; but his attendants eagerly caught up the detached ones, assuring him that they were perfectly good to eat. They informed him, that near the nest there are always placed a certain number of eggs, which the birds do not sit upon, and which are designed for the first nourishment of the future young. "Experience, (says M. Le Vaillant) has convinced me of the truth of this observation; for I never afterwards met with an Ostrich's nest, without finding eggs disposed in this manner."

Some time after this, M. Le Vaillant found a female Ostrich on a nest containing thirty-two eggs; and twelve eggs were arranged at a little distance, each in a separate cavity formed for it. He remained near the place some time; and saw three other females come and alternately seat themselves in the nest; each sitting for about a quarter of an hour, and then giving place to another, who, while waiting, sat close by the side of her whom she was to succeed.

That Ostriches have a great affection for their offspring, may be inferred from the assertion of Professor Thunberg, that he once rode past the place where a hen Ostrich was sitting on her nest; when the bird sprang up and pursued him, evidently with a view to prevent his noticing her eggs or young. Every time he turned his horse towards her, she retreated ten or twelve paces; but as soon as he rode on again, she pursued him, till he had got to a considerable distance from the place where he had started her.

If the eggs of Ostriches be touched by any person in the absence of the parents, the birds not only desist from laying any more in the same place, but trample to pieces with their feet all those that have been left. The natives of Africa, therefore, are very careful in taking part of the eggs away, not to touch any of them with their hands, but always to push them out of the nest with a long stick.

In the interior of the eggs there are frequently discovered a number of small oval-shaped pebbles, about the size of a marrow-fat pea; of a pale yellow color, and exceedingly hard. Mr. Barrow states that he saw in one egg nine and in another twelve. These stones are sometimes set, and used for buttons.

This gentleman, states that the eggs of the Ostrich are considered a great delicacy. They are prepared as food in various ways: but the best way, he says, is to bury them in hot ashes; and, through a hole made in the upper end, to stir the contents round till they acquire the consistence of an omelet. Prepared in this manner he often found them an excellent repast, in his long journeys over the wilds of Africa. These eggs are easily preserved for a great length of time, even at sea; and without any of that trouble of constantly turning them, which is necessary with hen's eggs. This is owing entirely to the thickness and strength of the shells. At the Cape of Good Hope they are usually sold for about twelve cents each. From their large size, one of them is sufficient to serve two or three persons at a meal.

Thunberg saw necklaces and ornaments for the waist, that had been

made of the shells of the eggs, by grinding bits of them into the form of small rings.

The Ostrich itself is chiefly valuable for its plumage; and the Arabians have reduced the chase of it to a kind of science. They hunt it on horseback, and begin their pursuit by a gentle gallop; for, should they at the outset use the least rashness, the matchless speed of the game would immediately carry it out of their sight, and in a very short time beyond their reach. But when they proceed gradually, it makes no particular effort to escape. It does not go in a direct line, but runs first to one side and then to the other; this its pursuers take advantage of, and, by rushing directly onward, save much ground. In a few days, at most, the strength of the animal is exhausted; and it then either turns on the hunters and fights with the fury of despair, or hides its head, and tamely receives its fate.

Some persons breed Ostriches in flocks: for they may be tamed with very little trouble; and in their domestic state few animals may be rendered more useful. Besides the valuable feathers which they cast; the eggs which they lay; their skins, which are used by the Arabians as a substitute for leather; and their flesh, which many esteem as excellent food, they are sometimes made to serve the purpose of Horses.

In a tame state, it is pleasant to observe with what dexterity they play and frisk about. In the heat of the day, particularly, they will strut along the sunny side of a house with great majesty, perpetually fanning themselves with their expanded wings, and seeming at every turn to admire, and be enamored of, their own shadows. During most parts of the day, in hot climates, their wings are in a kind of vibrating or quivering motion, as if designed principally to assuage the heat.

They are tractable and familiar towards persons who are acquainted with them; but they are often fierce towards strangers, whom they sometimes attempt to push down, by running furiously upon them; and, on succeeding in this effort, they not only peck at the fallen foe with their bills, but strike at him violently with their feet. While thus engaged, the Ostriches sometimes make a fierce hissing noise, and have their throats inflated and their mouths open. At other times they make a kind of cackling noise, like some species of poultry: this they use when they have overcome or routed an adversary. During the night they often utter a doleful or hideous cry, somewhat resembling the distant roaring of a Lion, or the hoarse tone of a Bear or an Ox, as if they were in great agony.

They will swallow, with the utmost voracity, rags, leather, wood, iron, or stone, indiscriminately. "I saw one at Oran, (says Dr. Shaw,) that swallowed, without any seeming uneasiness or inconvenience, several leaden bullets, as they were thrown upon the floor, *scorching hot from the mould!*"

When Mr. Adanson was at Podar, a French factory on the southern branch of the river Niger, two young but nearly full-grown Ostriches belonging to the factory, afforded him a very amusing sight. They were so tame, that two little blacks mounted both together on the back of the largest. No sooner did he feel their weight, than he began to



STALKING OSTRICH.

run as fast as possible, and carried them several times round the village, as it was impossible to stop him otherwise than by obstructing the passage. This sight pleased Mr. Adanson so much, that he wished it to be repeated; and, to try their strength, he directed a full-grown negro to mount the smaller, and two others the larger of the birds. This burden did not seem at all disproportioned to their strength. At first they went at a tolerably sharp trot; but when they became heated a little, they expanded their wings, as though to catch the wind and moved with such fleetness that they scarcely seemed to touch the ground. Most people have seen a Partridge run, and consequently they must know that no man is able to keep up with it: and it is easy to imagine, that if the Partridge had a longer step, its speed would be considerably augmented. The Ostrich moves like the Partridge, with this advantage; and the two birds here spoken of would have distanced the fleetest race-horses that ever were bred. It is true, they would not have held out so long as a horse; but they would undoubtedly have been able to go over a given short space in less time.

THE CASSOWARY.

The body of the Cassowary is extremely heavy, and its wings are so short, that it has no power to raise itself from the ground in flight. The quills of which the wings are composed, are five in number; they are strong, distant from each other, and without barbs. They are, in short, so many spines; and are given to the animals as weapons of defence against its enemies. The beak is about five inches long, somewhat curved, and of a very hard substance. A bony protuberance covered with horn, and of a blackish brown color, forms on the top of the head a sort of helmet. The skin of the head and neck is entirely naked, and is of a fine blue color above and red below. On each side of the front of the neck, hangs a long light blue caruncle or wattle. The body is covered with black feathers, which at a little distance, have the appearance of hair. Those on the hinder part of the back are of such length, as entirely to conceal the tail. The thighs are each about eighteen inches long, and are covered with feathers almost to the knees. The legs are remarkably stout: the toes of each foot are only three in number, and the nail of each internal toe is about twice the length of any of the others.

Like the Ostrich, this bird is not very delicate in its taste. It will swallow almost any thing not too large to pass down its throat, that is presented to it. Some writers have asserted, that the Cassowary will occasionally swallow even burning coals. It is particularly fond of fruit, and of the eggs of poultry; but it is not able to eat any kind of grain, as the tongue is so formed as to have no power of guiding this down the throat.

A Cassowary now kept in the Menagerie of the museum at Paris, devours every day between three and four pounds weight of bread, six or seven apples, and a bunch of carrots. In summer, it drinks about four pints of water in the day; and in winter somewhat more.

It swallows all its food without bruising it. The bird is sometimes ill tempered and mischievous; is much irritated when any person approaches it of a dirty or ragged appearance, or dressed in red clothes; and frequently attempts to strike at them by kicking forward with its feet. It has been known even to leap out of its enclosure, and to tear the legs of a man with its claws.



GROUP OF CASSOWARIES

The Cassowary is a very vigorous and powerful bird. Its beak being, in proportion, much stronger than that of the Ostrich, it has the means of defending itself with great advantage, and of easily

pulling down and breaking in pieces almost any hard substance. It strikes, in a very dangerous manner with its feet, either behind or before, at any object which offends it.

In a wild state these birds lay three or four eggs at a time, and these are generally of a greenish or greyish color, beautifully spotted with grass green, and marked towards their smaller end with white. The female deposits them in the sand, and, after having covered them over, leaves them to be hatched by the heat of the sun and the atmosphere. In some countries, however, and under some circumstances, Cassowaries sit upon their eggs like other birds.

Cassowaries are found only in the south-eastern parts of Asia; that is, in the peninsula of India beyond the Ganges, and in the islands of the Indian Archipelago; but they are not very numerous in any of these places. The deep forests of the island of Ceram, along the southern coast from Ethiopia almost to Kelemori, contain, however, great numbers of them.

THE EMU.

The Emu is a native of New Holland, and nearly equals the Ostrich in bulk, its height being between five and six feet. Its feathers lie loosely on the body, and its wings are small and hardly to be distinguished. The skin of the Emu furnishes a bright and clear oil, on which account it is eagerly sought after.

THE APTERYX.

This extraordinary bird, whose name is derived from the apparent absence of wings, those members being merely rudimentary, inhabits the islands of New Zealand. It conceals itself among the densest fern, and when hunted by dogs, it hastens to seek a refuge among rocks and in the chambers which it excavates in the earth. In these chambers its nest is made and the eggs laid. The natives hunt it with great eagerness, as the skin is used for the dresses of chiefs, who are so tenacious of them that they can hardly be persuaded to part with a single skin. The feathers are employed to make artificial flies. When attacked it defends itself by rapid and vigorous strokes with its powerful feet.



THE APTERYX.

Dr. Shaw first brought this bird before the notice of the public, but for many years naturalists considered it an extinct species. Latterly the question has been set at rest, not only by the researches of Gould and other naturalists, but by the arrival in England of several skins

and one living specimen, now in the Zoological Gardens. This bird has a singular habit of of resting with the tip of its bill placed on the ground. The nostrils of the Apteryx are placed almost at the very extremity of the bill. The aborigines of New Zealand give it the name of Kiwi Kiwi. The food of the bird consists of snails, insects and worms, which latter creatures it obtains by striking the ground with its feet, and seizing them on their appearance at the surface.

A small but well preserved skin is mounted in the Ashmolean Museum, Oxford, in which the rudimentary wings are very well shown. An entire skeleton is in the museum of the College of Surgeons, and other specimens are to be seen in various collections

THE DODO.

This singular bird, which is supposed to be extinct, was discovered at the Mauritius by the early voyagers. For many years their accounts of the Dodors were supposed to be mere flights of fancy. Lately, however, the discovery of several relics of this bird in various countries has set the question of its existence at rest, but not the question of the proper position of the bird. Some think it belongs to the Pigeons, and some to the ostriches. In the Ashmolean Museum at Oxford are a head and foot of the Dodo, sole remnants of a perfect specimen known to have existed in 1700; and in the same place, in the year 1847, during the meeting of the British Association, were gathered together the whole of the existing remains from every country.



THE DODO.

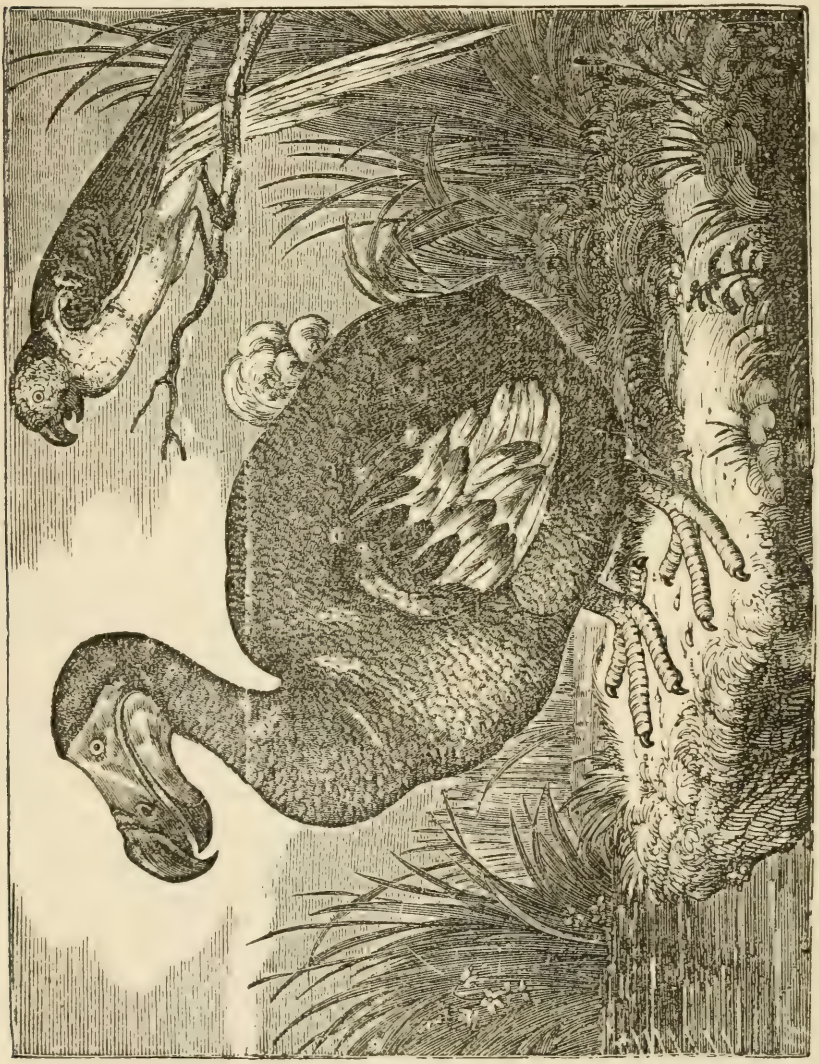
In the travels of Sir T. Hubert, in the year 1627, are several accounts. From the work of this traveller, whose amusement it was to re-write his travels, each time completely changing the language but retaining the matter, an extract is taken.

"The Dodo, a bird the Dutch call Walghvogel, or Dod Eersen; her body is round and fat, which occasions the slow pace, or that her corpulencie, and so great as few of them weigh less than fifty pound: meat it is with some, but better to the eye than stomach, such as only a strong appetite can vanquish. . . It is of a melancholy visage, as sensible of nature's injury in framing so massie a body to be directed by complimental wings, such, indeed, as are unable to hoise her from the ground, serving only to rank her among birds. Her traine, three small plumes, short and improportionable, her legs suiting to her body, her pounces sharpe, her appetite strong and greedy. Stones and iron are digested; which description will better be conceived in her representation." The "representation" here alluded to is that of a globular-shaped bird, perfectly naked, with the exception of three separate feathers on the tail, and a few feathers on the wing. The expression of lugubrious wisdom on the countenance is irresistibly ludicrous.

It [illegible] within the range of possibility that this bird may again be

discovered, as at present but little of Madagascar nas been searched and in that island, if anywhere, it will be found.

Another bird, the gigantic Dinornis, has been extirpated from the face of the earth by man. This enormous bird, whose leg is rather larger than that of a fossil Elk, and whose head could not have been less



than ten feet and a half from the ground, was at one time an inhabitant of New Zealand, but has been extirpated for many years, a fact likely to befal the defenceless Apteryx. In the Anatomical Museum at Oxford is a cast of a leg of the Dinornis, standing side by side with that of an Ostrich. The leg of the Ostrich is quite insignificant.

WADERS.

OF THE HERON TRIBE IN GENERAL.

In the Waders (or *Grallæ* of Linnæus) the bill is somewhat cylindrical. The thighs are feathered only half-way to the knees; and the legs are longish, and formed for walking.

The characters of the tribe are: a long, strong, and sharp-pointed bill; linear nostrils, and pointed tongue: toes connected by a membrane as far as the first joint; and the middle claw, in some of the species, pectinated.

The different kinds of Herons are very numerous, amounting in the whole to nearly a hundred. They are found in various parts of the world, but chiefly in temperate and hot climates. Several of them are migratory. They have long feet and necks, and live almost wholly on amphibious animals and fishes.

THE COMMON CRANE.

This is a large bird, measuring upwards of five feet in length. The bill is more than four inches long. The plumage is, in general, ash-colored: but the forehead is black; and the sides of the head, behind the eyes, and the hind part of the neck, are white; on the upper part of the neck there is a bare ash-colored space of two inches; and, above this, the skin is naked and red, with a few scattered hairs. Some parts about the wings are blackish. From the pinion of each wing springs an elegant tuft of loose feathers, curled at the ends; which can be erected at will, but which in a quiescent state hangs over and covers the tail. The legs are black.

These birds are seen in numerous flocks in all the northern parts of Europe. We are told that they make their nests in marshes, and lay two bluish eggs. They feed on reptiles of all kinds, and on some species of vegetables; while corn is green, they are said to make such havoc in the fields as to ruin the farmers, where ever the flocks alight.

They are migratory; returning northward in the spring, (where they generally make choice of the places which they occupied during the preceding season,) and in the winter inhabiting the warmer regions of Egypt and India. They fly very high, and arrange themselves in the form of a triangle, the better to cleave the air. When the wind freshens, and threatens to break their ranks, they collect their force into a circle; and they adopt the same disposition when attacked by powerful birds of prey. Their migratory voyages are chiefly performed in the night; but their loud screams betray their course. During these nocturnal expeditions the leader frequently calls, in order to rally his forces, and to point out the track: and the

cry is repeated by the flock, each answering, to give notice that it follows and keeps its rank. The flight of the Crane is always supported uniformly, though it is marked by different inflections: and these variations have been observed to indicate a change of weather.

When the Cranes are assembled on the ground, they are said to set guards during the night; and the circumspection of these birds has even been consecrated in ancient hieroglyphics, as symbols of vigilance.

According to Kolben, Cranes are often observed in large flocks in the marshes about the Cape of Good Hope. He says, that he never saw a flock of them on the ground, which had not some birds placed apparently as sentinels, on watch while the others were feeding. These sentinels stand on one leg; and, at intervals, stretch out their necks, as if to observe that all is safe. When notice of danger is given, the whole flock rise on wing and fly away

THE DEMOISELLE CRANE.

This bird is chiefly remarkable for the considerable idea that it appears to have respecting the beauty of its own person. Its deportment is very singular, and at times even ludicrous. Whenever it takes it into its head to be ridiculous, it does so most effectually, and affectedly also. It moves about with a consequential air, hanging its head first on one side and then on the other. It then will run some twenty or thirty yards, treading only on the tips of its toes, as if it wore white satin shoes, and were trying to pick its way over a very dirty road. Then it will have a little dance all to itself, and suddenly stand still again quite grave and composed, as if it had been doing nothing at all. From these habits, cynical naturalists have named in the Demoiselle. It is rather a tall bird, being between three and four feet in height.



THE DEMOISELLE CRANE.

THE WHITE STORK.

The length of the White Stork is about three feet. The bill is nearly eight inches long, and of a fine red color. The plumage is wholly white; except the orbits of the eyes, which are bare and blackish: some of the feathers on the side of the back and on the wings are black. The skin, the legs, and the bare part of the thighs, are red.

The White Storks are semi-domestic birds, haunting towns and cities; and, in many places, stalking unconcernedly about the streets, in search of offal and other food. They remove noxious filth, and clear the fields of serpents and reptiles. On this account they are protected in Holland, and are held in high veneration by the Mahomedans.

Bellonious informs us that "Storks visit Egypt in such abundance that the fields and meadows are white with them. Yet the Egyptians are not displeased with this sight; as Frogs are there generated in such numbers, that d d not the Storks devour them, they would overrun every thing. They also catch and eat serpents. Between Belba and Gaza, the fields of Palestine are often rendered desert on account of the abundance of mice and rats; and, were these not destroyed, the inhabitants could have no harvest."

The disposition of the Stork is mild and placid. This bird is easily tamed; and may be trained to reside in gardens, which it will clear



THE STORK.

of insects and reptiles. It has a grave air, and a mournful visage yet, when roused by example, it exhibits a certain degree of gaiety; for it joins in the frolics of children, hopping about and playing with them: "In a garden (says Dr. Hermann) where the children were playing at hide-and-seek, I saw a tame Stork join the party; run its turn when touched; and distinguish the child whose turn it was to pursue the rest, so well, as, along with the others, to be on its guard."

To the Stork the ancients ascribed many of the moral virtues; as temperance, conjugal fidelity, and filial and paternal piety. The manners of this bird are such as were likely to attract peculiar attention. It bestows much time and care on the education of its offspring, and does not leave them till they have strength sufficient for their own support and defence. When they begin to flutter out of the nest, the mother bears them on her wings; she protects them from danger, and will some times perish rather than forsake them. A celebrated story is current in Holland, that, when the city of Delft was on fire, a female Stork in vain attempted several times to carry off her young ones; and, finding she was unable to effect their escape, suffered herself to be burned with them.

The following anecdote affords a singular instance of sagacity in this bird:—"A wild Stork was brought by a farmer, who resided near Hamburgh, into his poultry-yard, to be the companion of a tame one that he had long kept there; but the tame Stork, disliking a rival, fell upon the poor stranger, and beat him so unmercifully that he was compelled to take wing, and with some difficulty escaped. About four months afterwards, however, he returned to the poultry-yard, recovered of his wounds, and attended by three other Storks who no sooner alighted than they all together fell upon the tame Stork and killed him."

Storks are birds of passage, and observe great exactness in the time of their autumnal departure from Europe to more favorite climates. They pass a second summer in Egypt and the marshes of Barbary. In the former country they pair; again lay, and educate a second brood. Before each of their migrations, they rendezvous in amazing numbers. They are for a while much in motion among themselves; and after making several short excursions, as if to try their wings, they suddenly take flight with great silence.

These birds are seldom seen further north than Sweden; and, though they have scarcely ever been found in England, they are so common in Holland as to build on the tops of the houses, where even the inhabitants provide boxes for them to make their nests in. Storks are also common at Aleppo; and are found in great numbers at Seville, in Spain. At Bagdad, hundreds of their nests are seen about the houses, walls, and trees; and at Persepolis, in Persia, the remains of the pillars serve them for nesting places, "every pillar having a nest upon it."

During their migrations Storks are observed in vast flocks. Dr. Shaw saw three flights of them leaving Egypt, and passing over Mount Carmel, each half a mile in width: and he says they were three hours in passing over.

THE HOME OF THE FOLK.

THE CHAJA.

The Chaja, or Crested Screamer, is about the size of a Heron: the bill is short, bent like that of a bird of prey, and of a yellowish brown: the irides are gold-colored; on the forehead, just above the bill, is a tuft of black feathers, variagated with ash-color; the head, neck, and body are grey, mixed with brown; the wings are furnished with spurs; the legs pretty long, of a dull yellow; the hind toe placed high up, so as not to touch the ground in walking.



THE CHAJA AND ITS YOUNG.

THE COMMON HERON.

The Common Heron is about three feet three inches in length. The bill is six inches long, and of a dusky color. The feathers of the head are long, and form an elegant crest. The neck is white. The general color of the plumage is blue gray.



THE GIANT HERON.

This is an extremely formidable enemy to the scaly tribes. There is, in fresh waters, scarcely a fish, however large, that the Heron will not strike at and wound, though unable to carry it off: but the smaller fry are his chief subsistence; these, pursued by their larger fellows of the deep, are compelled to take refuge in shallow waters, where they find the Heron a still more formidable enemy. His method is to wade as far as he can go into the water, and there patiently to await the approach of his prey; into which, when it comes within his sight, he darts his bill with inevitable aim. Willughby says he has seen a Heron that had in his stomach no fewer than seventeen Carp. Some gentlemen who kept tame Herons, were desirous of ascertaining what average quantity one of these birds

would dovour. They consequently put several small Roach and Dace into a tub; and the Heron, one day with another, ate fifty in a day. Thus a single Heron is able to destroy nine thousand Carp in half a year.

The Heron, though he usually takes his prey by wading, frequently catches it while on wing; but this is only in shallow waters, where he is able to dart with more certainty than in the deeps; for in this case, though the fish, at the first sight of its enemy, descends, yet the Heron, with its long bill and legs, instantly pins it to the bottom, and thus seizes it securely. In this manner, after having been seen with its neck for above a minute under water, he will rise on wing with a Trout or an Eel struggling in his bill. The greedy bird, however, flies to the shore, swallows it, and returns to his fishing.



HERON.

Heron-hawking was formerly a favorite diversion; and a penalty of twenty shillings was incurred by any person taking the eggs of this bird. Its flesh was also in former times much esteemed, being valued at a rate equal with that of the Peacock.

In their breeding season the Herons unite together in large societies, and build in the highest trees. Sometimes as many as eighty nests have been seen in one tree. The nest is made of sticks, and lined with a few rushes and wool, or with feathers. The eggs are four or five in number, and of a pale-green color.

If taken young, these birds may be tamed; but the old birds, when captured, soon pine away, refusing every kind of nourishment.

The different parts of the body of the Heron are admirably adapted to its mode of life. This bird has long legs, for the purpose of wading; a long neck, answerable to these, to reach its prey in the water; and a wide throat to swallow it. Its toes are long, and armed with strong, hooked talons; one of which is serrated on the edge, the better to retain the fish. The bill is long and sharp, having towards the point serratures, which stand backward; these, after the prey is struck, act like the barbs of a fish-hook, in detaining it till the bird has time to seize it with its claws. Its broad, large, and concave wings, are of great use in enabling it to carry its load to the nest, which is sometimes at a great distance. Dr. Derham tells us, that he has seen lying scattered under the trees of a large heronry, fishes many inches in length, which must have been conveyed by the birds from the distance of several miles; and D' Acre Barret, Esq., the owner of this heronry, saw a large Eel that had been conveyed thither by one of them, notwithstanding the inconvenience that it must have experienced from the fish writhing and twisting about.

The body of the Heron is very small, and always lean; and the skin is said to be scarcely thicker than what is called goldbeater's skin. It is probable that this bird is capable of long abstinence; as its usual food, which consists of fish and reptiles, cannot at all times be had.

THE GREAT HERON.

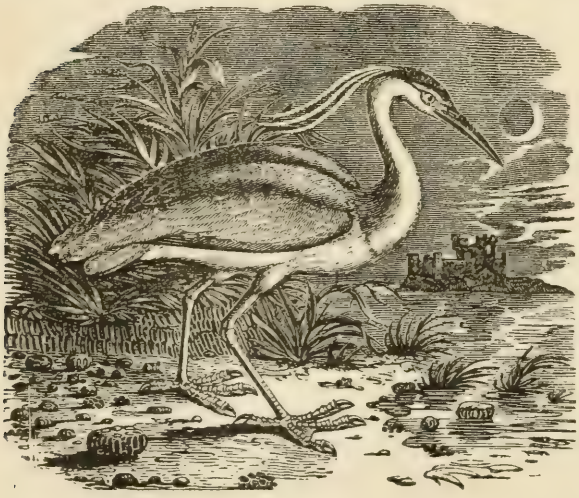
The Great Heron of America, nowhere numerous, may be considered as a constant inhabitant of the Atlantic States, from New York to East Florida. As a rare visitor, it has been found even as far north as Hudson's Bay, and passes the breeding season in small numbers along the coasts of all the New England States, and the adjoining parts of British America. Mr. Say also observed this species at Pembino, in the forty-ninth parallel. Ancient natural heronries of this species occur in the deep maritime swamps of North and South Carolina: similar associations for breeding exist also in the lower parts of New Jersey. Their favorite and long frequented resorts are usually dark and enswamped solitudes or boggy lakes, grown up with tall cedars, and entangled with an undergrowth of bushes and Kalmia laurels. These recesses defy the reclaiming hand of cultivation, and present the same gloomy and haggard landscape they did to the aborgines of the forest, who, if they existed, might still pursue through the tangled mazes of these dismal swamps, the retreating bear, and timorous deer. From the bosom of these choked lakes, and arising out of the dark and pitchy bog, may be seen large clumps of the tall Cypress (*Cupressus disticha*,) like the innumerable connecting columns of the shady mangrove, for sixty or more feet rising without a branch, and their spreading tops, blending together, form a canopy so dense as almost to exclude the light from beneath their branches. In the tops of the tallest of these trees, the warv Herons, associated to the number of ten or fifteen pairs, construct their nests, each one in the top of a single tree; these are large, formed of coarse sticks, and merely lined with smaller twigs. The eggs, generally four, are somewhat larger than those of the Hen, of a light greenish blue, and destitute of spots. The young are seen abroad about the middle of May, and become extremely fat and full grown before they make any effective attempts to fly. They raise but a single brood; and when disturbed at their eyries, fly over the spot, sometimes honking almost like a goose, and at others uttering a loud, hollow, and guttural grunt.

Fish is the principal food of the Great Heron, and for this purpose like an experienced angler, he often waits for that condition of the tide, which best suits his experience and instinct. At such times, they are seen slowly sailing out from their inland breeding haunts, during the most silent and cool period of the summer's day, selecting usually, such shallow inlets as the ebbing tide leaves bare, or accessible to his watchful and patient mode of prowling; here, wading to the knees, he stands motionless amidst the timorous fry, till some victim coming within the compass of his wily range, is as instantly seized by the powerful bill of the Heron, as if it were the balanced poniard of the assassin, or the unerring pounce of the Osprey. If large, the fish is beaten to death, and commonly swallowed with the head descending as if to avoid any obstacle arising from the reversion of the fins or

any hard external processes. On land, our Heron has also his fare, as he is no less a successful angler than a mouser, and renders an important service to the farmer, in the destruction he makes among most of the reptiles and meadow shrews. Grasshoppers, other large insects, and particularly Dragon-flies, he is very expert at striking, and occasionally feeds upon the seeds of the pond lilies, contiguous to his usual haunts. Our species, in all probability, as well as the European Heron, at times, also preys upon young birds, which may be accidentally straggling near their solitary retreats. The foreign kind has been known to swallow young snipes, and other birds, when they happen to come conveniently within his reach.

THE QUA BIRD, OR AMERICAN NIGHT HERON.

The Great Night Heron of America, extends its migrations probably to the northern and eastern extremities of the United States, but is wholly unknown in the high boreal regions of the continent. In the winter it proceeds as far south as the tropics, having been seen in the marshes of Cayenne, and their breeding stations are known to extend from New Orleans to Massachusetts. They arrive in Pennsylvania early in the month of April, and soon take possession of their ancient nurseries, which are usually, (in the Middle and Southern States,) the most solitary and deeply shaded part of a cedar swamp or some inundated and almost inaccesible grove of swamp oaks. In these places, or some contiguous part of the forest, near a pond or stream, the timorous and watchful flock pass away the day, until the commencement of twilight, when the calls of hunger, and the coolness of evening arouse the dosing throng into life and activity. At this time, high in the air, the parent birds are seen sallying forth towards the neighboring marshes and strand of the sea, in quest of food, for themselves and their young; as they thus proceed in a marshalled rank, at intervals they utter a sort of recognition call, like the guttural



NIGHT HERON.

sound of the syllable *'kwah*, uttered in so hollow and sepulchral a tone, as almost to resemble the retchings of a vomiting person These venerable eyries of the Kwah Birds, have been occupied from the remotest period of time, by about eighty to a hundred pairs. When their ancient trees were levelled by the axe, they have been known to remove merely to some other quarter of the same swamp, and it is only when they have been long teased and plundered that they are ever known to abandon their ancient stations. Their greatest natural enemy is the Crow, and according to the relation of Wilson, one of these heronries, near Thompson's Point, on the banks of the Delaware, was at length entirely abandoned, through the persecution of these sable enemies. Several breeding haunts of the Kwah Birds occur among the red cedar groves, on the sea beach of Cape May; in these places they also admit the association of the Little Egret, the Green Bittern, and the Blue Heron. In a very secluded and marshy island, in Fresh Pond, near Boston, there likewise exists one of these ancient heronries; and though the birds have been frequently robbed of their eggs, in great numbers, by mischievous boys, they still lay again immediately after, and usually succeed in raising a sufficient brood. The nests, always in trees, are composed of twigs, slightly interlaced, more shallow and slovenly than those of the Crow, and though often one, sometimes as many as two or three nests are built in the same tree. The eggs about four, are as large as those of the common hen, and of a pale greenish blue color. The marsh is usually whitened by the excrements of these birds; and the fragments of broken egg shells, old nests, and small fish, which they have dropped while feeding their young, give a characteristic picture of the slovenly, indolent, and voracious character of the occupants of these eyries.

THE GREEN HERON.

The Green Bittern is the most common species in the United States. In common with other species, whose habits are principally nocturnal the Green Bittern seeks out the gloomy retreat of the woody swamp, the undrainable bog, and the sedgy marsh. He is also a common hermit, on the inundated, dark willow and alder shaded banks of sluggish streams, and brushy ponds, where he not only often associates with the kindred Kwah Birds and Great Herons, but frequently with the more petulant herd of chattering Blackbirds. When surprised or alarmed, he rises in a hurried manner, uttering a hollow guttural scream, and a *'k'w*, *'k'w*, *'k'w*, but does not fly far, being very sedentary and soon alighting on some stump or tree, looks round with an outstretched neck, and balancing himself for further retreat, frequently jets his tail. He sometimes flies high, with his neck reclining, and his legs extended, flapping his wings, and proceeding with considerable expedition. He is also the least shy, of all our species, as well as the most numerous and widely dispersed, being seen far inland, even on the banks of the Missouri, nearly to the river Platte, and frequently near all the maritime marshes, and near ponds, and streams in general. He is also particularly attracted by artificial ponds for fish, not refrain-

ing even to visit gardens and domestic premises, which any prospect of fare may offer. He is, at the same time, perhaps as much in quest of the natural enemy of the fish, the frog, as of the legitimate tenants of the pond. These bold and intrusive visits are commonly made early in the morning, or towards twilight, and he not unfrequently when pressed by hunger, or after ill success, turns out to hunt his fare by day, as well as dusk, and, at such times, collects various larvæ, particularly those of the Dragon-fly, with Grasshoppers, and different kinds of insects. At other times he preys upon small fish, Crabs and Frogs, for which he often lies patiently in wait till they reappear from their hiding places in the water or mud, and on being transfixed and caught, which is effected with great dexterity, they are commonly beaten to death, if large, and afterwards swallowed at leisure.

THE BOAT-BILL.

This genus of the family *Arclëidal* (Heron-like birds,) would approach quite closely, as Cuvier observes, to the Herons, in regard to their bill and the kind of food which it indicates, were it not for the extraordinary form of that organ, which is nevertheless, when closely observed the bill of a Heron or a Bittern, very much flattened out. This bill is of an oval form, longer than the head, very much depressed, and not unlike the bowls of two spoons placed one upon another, with the rims in contact. The common Boat-bill is about the size of a domestic hen. In the male the forehead and upper parts of the neck and breast, are dirty white; the back and lower part of the belly rusty-reddish; the bill is black, and the legs and feet are brown. From the head depends a long crest of black feathers, falling backwards. The female



BOAT-BILL.

has the top of the head black, without the elongated crest; the back and the belly rusty-reddish; the wings grey; the forehead and rest of the plumage white; and the bill, legs, and feet brown.

THE GIGANTIC CRANE.

This is a large species, measuring from tip to tip of the wings nearly fifteen feet. The bill is of vast size, somewhat triangular, and sixteen inches round at the base. The head and neck are naked, except a few straggling curled hairs. The feathers of the back and wings are of a bluish ash-color, and very stout: those of the breast are long. The craw hangs down the fore part of the neck like a pouch. The belly is covered with a dirty-white down; and the upper part of the back and shoulders is surrounded with the same. The legs and half the thighs are naked; and the naked parts are nearly three feet in length.

The Gigantic Crane, sometimes called the Adjutant, is an inhabitant of Bengal and Calcutta, and is sometimes found on the coast of Guinea. It arrives in the interior parts of Bengal before the period of rains, and retires as soon as the dry season commences. Its aspect is filthy and disgusting; yet it is an extremely useful bird, in consequence of the snakes, noxious reptiles and insects which it devours. It seems to finish the work that is begun by the jackal and vulture: these clear away the flesh of animals, and the Gigantic Cranes remove the bones by swallowing them entire. They sometimes feed on fish; and one of them will devour as much as would serve four men to dinner. On opening the body of a Gigantic Crane, there were found in its craw a land tortoise, ten inches long, and in its stomach a large black cat. Being altogether undaunted at the sight of mankind, these birds are soon rendered familiar; and when fish or other food are thrown to them they catch them very nimbly, and immediately swallow them.

The Indians believe that these Cranes are invulnerable, and that they are animated by the souls of the Brahmins. They are held in the highest veneration both by the Indians and Africans. Mr. Ives, in attempting to kill some of them with his gun, missed his shot several times; this the bystanders observed with great satisfaction, telling him triumphantly that he might shoot at them as long as he pleased, but that he would never be able to kill any of them.

There seems no doubt that this is the species mentioned by Mr. Smeathman, as having been seen by him in Africa. The birds that he describes were at least seven feet high.

These birds are found in companies; and, when seen at a distance, near the mouths of rivers, coming towards an observer (which they do with their wings extended), they may be mistaken for canoes on the surface of a smooth sea; and when stalking about on the sandbanks, they appear like men and women picking up shell-fish on the beach.

A young bird of this kind, about five feet in height, was brought up tame, and presented to the Chief of the Bananas, where Mr. Smeathman lived; and in whose house it soon became perfectly familiar. It regularly attended the hall at dinner-time; and placed



ADJUTANTS.

itself behind its master's chair, frequently before any of the guests entered. The servants were obliged to watch it carefully, and to defend the provisions by beating it off with sticks; yet, notwithstanding every precaution, it would frequently snatch off something from the table. It one day purloined a whole boiled fowl, which it swallowed in an instant. This bird used to fly about the island, and roost very high among the silk-cotton trees; from this station, at the distance of two or three miles, it could see when the dinner was carried across the court. As soon as this appeared it would dart down, and arrive early enough to enter with some of those who carried in the dishes.

When sitting, it was observed always to rest itself on the whole length of the hind part of the leg. It sometimes stopped in the room for half an hour after dinner; turning its head alternately, as if listening to the conversation. The courage of this bird was not equal to its voracity: for a child eight or ten years of age was able to put it to flight; though it would seem at first to stand on the defensive, by threatening with its enormous bill widely extended, and crying out with a loud, hoarse voice.

It preyed on small quadrupeds, birds, and reptiles; and though it would destroy poultry, it never dared openly to attack a hen with her young-ones. It had been known to swallow a Cat whole; and a bone of a shin of beef being broken, served it but for two morsels.

THE SUN BITTERN.

The Bittern is not so large as the Common Heron. Its bill also is weaker, and not more than four inches long. The gape, however, is so wide, that the eyes seem placed in the bill. The crown of the head is black; the feathers on the hind part forming a sort of pendent crest. The plumage is of a pale dull yellow, variously marked with black. Some parts about the wings are of a bright rust color, barred with black. The tail is very short; and the feathers on the breast are long and loose. The legs are of a pale green color; the claws long and slender; and the inside of the middle claw is serrated, for the better holding of its prey.

This is a very retired bird; dwelling among the reeds and rushes of extensive marshes, where it leads a solitary life, hid equally from the hunter whom it dreads, and the prey that it watches. It continues for whole days about the same spot, and seems to look for safety only in privacy and inaction.

In the autumn it changes its abode, always commencing its journey or change of place at sunset. Its precautions for concealment and security seem directed with great care and circumspection. It usually sits in the reeds with its head erect; by which from its great length of neck, it sees over their tops, without being itself perceived by the sportsman.

The principal food of the Bittern, during summer, consists of fish and frogs; but in the autumn these birds resort to the woods in pur

suit of mice, which they seize with great dexterity, and always swallow whole. About this season they usually become very fat.

The Bittern is not so stupid a bird as the Heron, but it is greatly more ferocious. When caught, it exhibits much rancor, and strikes chiefly at the eyes of its antagonist. Few birds make so cool a defence: it is never itself the aggressor; but, if attacked, it fights with the greatest intrepidity. If darted on by a bird of prey, it does not attempt to escape; but, with its sharp beak erected, receives the shock on the point, and thus compels its enemy to retreat, sometimes with a fatal wound.

When wounded by the sportsman, it often makes a severe resistance. It does not retire; but waits his onset, and gives such vigorous pushes with its bill, as to wound the leg, even through the boot. Sometimes it turns on its back, like the rapacious birds, and fights both with its bill and claws. When surprised by a dog, it is said always to throw itself into this posture. Mr. Markwick once shot a Bittern in frosty weather; it fell on the ice, which was just strong enough to support the dogs, and they immediately rushed forward to attack it; but being only wounded, it defended itself so vigorously, that the dogs were compelled to leave it, till it was fired at a second time and killed.

During the months of February and March, the males make a kind of deep lowing noise in the mornings and evenings. This is supposed to be the call to the females, and to be produced by a loose membrane, situated at the entrance of the throat, capable of great extension.

The nest of the Bittern is formed in April, among rushes; and almost close to the water. The female lays four or five greenish eggs and sits on them for about twenty-five days. The young-ones, when hatched, are naked and ugly, appearing almost all legs and neck; they do not venture abroad till about twenty days after their extrusion. During this time, the parents feed them with snails, small fish, or frogs. It is said that the hawks, which plunder the nests of most of the marsh-birds, seldom dare to attack those of the Bittern, on account of the old ones being always on their guard to defend their offspring.

A female Bittern, which was killed during the frost in winter, was found to have in her stomach several warty lizards, quite perfect, and the remains of some toads and frogs. These were supposed to have been taken out of the mud, under shallow water, in the swamp where the bird was shot.

The Common Bittern is the representative of a group having a compact body, long thin neck, a narrow high beak, large-toed feet, broad wings, a tail composed of ten feathers, and thick plumage, which is slightly prolonged on the neck. The sexes only differ in their size. In both the crown is black, the nape greyish black, mixed with yellow, and the rest of the plumage spotted and streaked with dark brown of various shades; the upper mandible is brownish grey, and the lower one of greenish hue; the foot is light green with yellow joints. This bird is twenty-eight inches long and forty-eight broad. The wing measures fifteen and the tail five inches. The nest is placed in marshes among reeds. The eggs are five in number, of an olive colour. Its food consists principally of fish and reptiles of various kinds.

TIGER BITTERN.

There is a species of Bittern, found in Guiana, called the Tiger Bittern. It is about thirty inches long, and of a darker color than the common Bittern, which it resembles in appearance and voice. It frequents the banks of rivers and marshy places, and builds its nest upon the ground.



THE COMMON BITTERN.

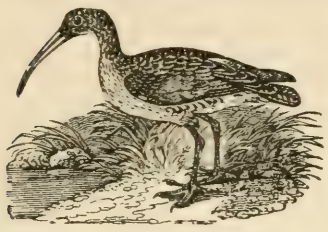
OF THE SNIPE TRIBE IN GENERAL.

In this tribe the bill is long, slender, weak, and straight. The nostrils are linear, and lodged in a furrow. The head is entirely covered with feathers. The feet have each four toes, the hind one of which is very short, and consists of several joints.

THE CURLEW.

These birds differ much in size; some of them weighing thirty-seven, and others not twenty-two ounces. The head, neck, and coverts

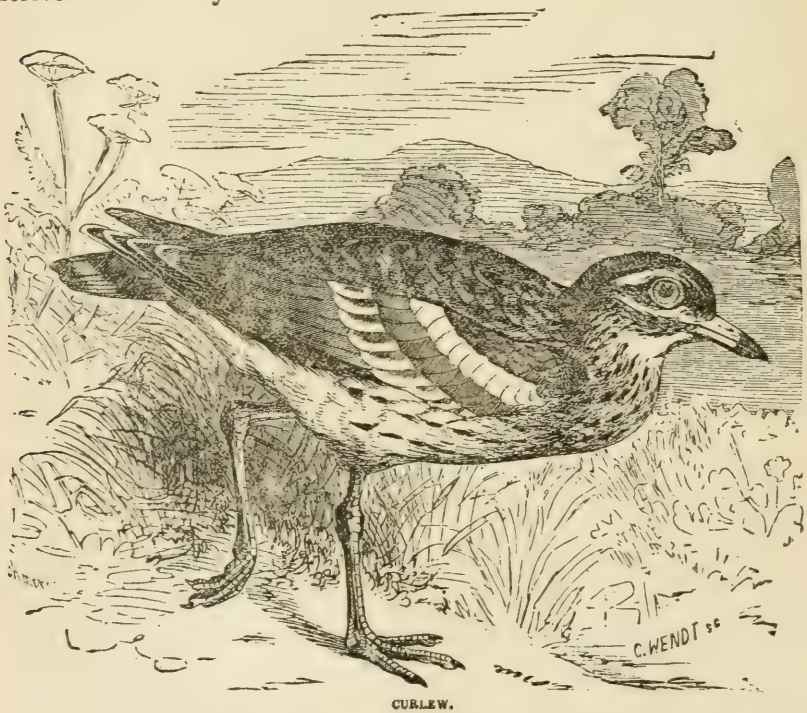
of the wings are of a pale brown color, and the middle of each feather is black. The breast and belly are white, marked with narrow oblong black lines. The back is white, spotted with a few black strokes. The quill-feathers are black, but the inner webs are spotted with white. The tail is white, tinged with red, and beautifully barred with black. The legs are long, strong and of a bluish gray color.



CURLEW.

Large flocks of Curlews are frequently seen, in the winter season, on the sea-coasts, running about upon the sands, and feeding on shell-fish, crabs, and marine insects: they are also found in marshes, where they subsist on small frogs, snails, insects, and worms. Their bill is so long, weak, and slender, that it is calculated only for digging into soft mud or earth, in search of prey.

Both the English and French names of this bird are evidently derived from its cry.



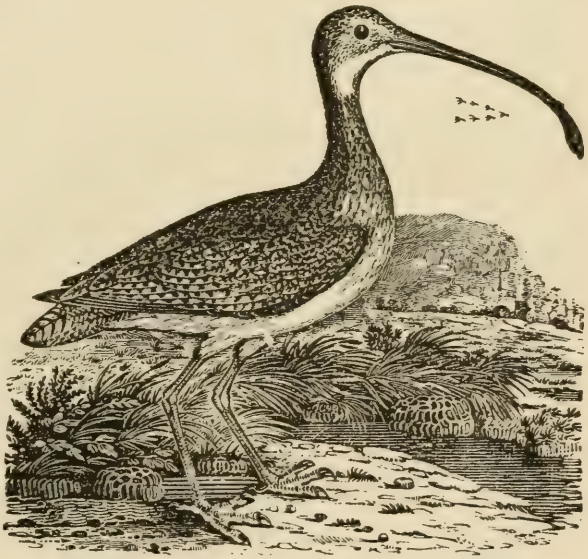
CURLEW.

In summer-time the Curlews retire to mountainous and unfrequented parts of the country, where they pair and breed. The eggs, which are four in number, are of a pale color, marked with irregular but distinct spots of brown.

THE LONG-BILLED CURLEW.

The Long-Billed Curlew is seen in the marshes of New Jersey about the middle of May, on its way further north: and in September, or the latter end of August, on their return from their breeding places. Their southern migrations, in all probability, are bounded by the shores of the Mexican Gulf. Like most species of the genus, they retire into the desolate regions of the north to breed. According to Wilson, a few instances have been known, of one or two pairs remaining in the salt marshes of Cape May the whole summer; and they were believed to nest there on the ground, laying four eggs in size and color much resembling those of the Clapper Rail. Indeed, it will probably be found, that many birds, now supposed to pass the period of reproduction, in the remote regions of the north, only separate into solitary pairs, and disperse themselves through the vast wilds of the interior of North America.

The Long-Billed Curlews fly high and rapid, generally throwing themselves, when in company, into an angular wedge, after the manner of Wild Geese; uttering, as they fly, and when at all alarmed, a loud, short, whistling, and almost barking note, sometimes, as in other species of the family, strongly resembling the sibilation of the word *kurlew*, and from whence they derive their characteristic name, adopted into so many of the European languages. By a dexterous imitation of this note, a whole flock may sometimes be enticed within gun shot; while the cries of the wounded continue the sympathetic enticement, until the fowler, repeating his shots, carries havoc among the quailing throng. Their food consists principally of insects, worms, and small Crabs. The young and old, also, on their arrival from the north, where they feed on various kinds of berries, still continue their fondness for this kind of food, and now frequent the uplands and pastures in quest of the fruit of the bramble, particularly dew-berries, on which they get so remarkably fat, at times, as to burst the skin in falling to the ground, and are then very superior in flavor to almost any other game bird of the season.



LONG-BILLED CURLEW.

THE GODWIT.

The Godwit belongs to a division of the Linnæan genus *Scolopax*, equally extensive with the Curlews, and containing more British species. It is only sixteen inches long, being smaller than the Curlew. It seldom remains more than a day in one place. On a fine moonlight night they may often be seen passing from one place to another, flying at a great height in the air.



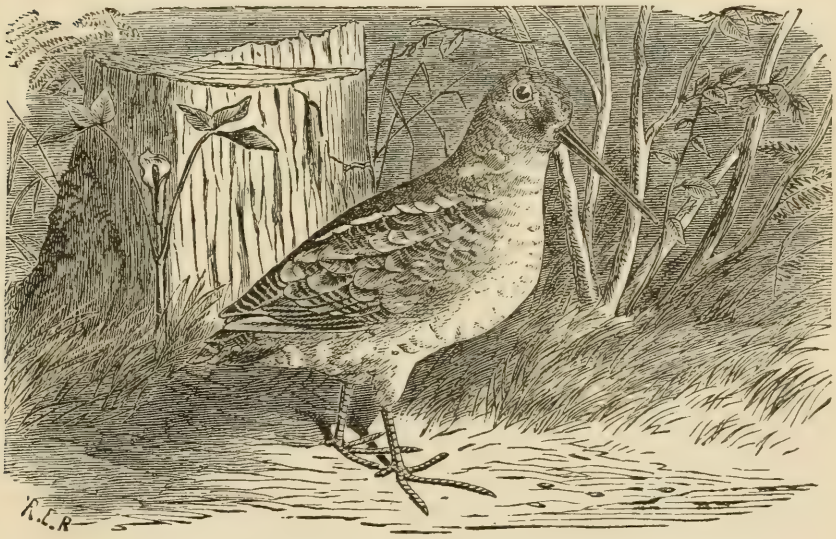
1. CURLEW. 2. GODWIT. 3. PURRE OR STRUT.

The Purre belongs to the family of Sandpipers, of which there are about seventeen British species, the Purre being one of the most

common. They are equally shy with the Curlews, and when alarmed give a kind of scream, and immediately skim off along the surface of the water in an undulating flight, making a series of semicircles as they alternately approach and recede from the shore. When this alarm has subsided, they alight on a rock at some distance from the place they formerly occupied, and then descend to the shore, to resume their interrupted meal. They are found in great numbers on the coasts of Devon and Arnwall.

WOODCOCKS.

In this tribe of birds, the bill is nearly similar with that of the Snipe, but more robust, with the extremity attenuated, and not depressed; the under mandible is also deeply grooved beneath. The eyes are placed very far back in the head, which last is rather quadrate than round. Legs robust, short, and wholly feathered to the knees, tarsus shorter than the middle toe; the toes cleft from the very base, and the hind nail truncated, and not projecting over the toe. The first or fourth primary longest.



WOODCOCK.

The female larger, and the young similar with the adult. The plumage undergoes no change with the moult; its general colors are a mixture, often intimate, of black, rufous and cinerous.

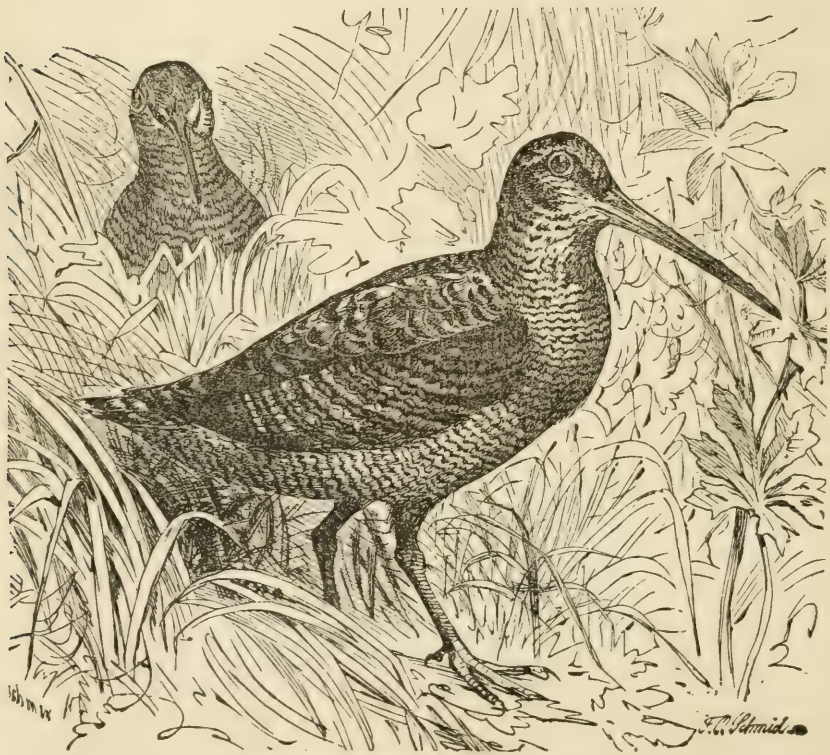
These are solitary birds, or only associating by pairs or families in the breeding season. They dwell habitually in forests both in the plains and mountains, and frequent shady swamps and thickets; but

seldom appear in open grounds. From the greater strength of their less sensitive bills, they are enabled to bore in drier ground than the Snipes, and use this organ often in turning over the fallen leaves and withered grass, in quest of their insect prey. They tend their young with great assiduity, conveying them from danger even by sometimes carrying them on their backs, or in their claws. Their flight is low and direct, accompanied by a whizzing sound, from the labor attending upon it. Although there are but two species known, in either continent, yet they are spread over the whole earth.

THE LESSER WOODCOCK.

The American Woodcock, like the Snipe, appears again to be a near representative of that in Europe, whose manners and habits it almost entirely possesses, differing however, materially in the temperature of the climates selected for its residence, confining itself in the summer to the south side of the St. Lawrence, breeding in all the intermediate space as far as the limits of the Middle States, and retiring in winter, for the most part, either to or beyond the boundray of the Union.

Early in March the American Woodcock revisits Pennsylvania,



THE LESSER WOODCOCK—MALE AND FEMALE.

and soon after the New England or Eastern States. Acording to their usual habits, they keep secluded in the woods and thickets, till the approach of evening, when they sally forth to seek out springs, paths, and broken soil, in quest of worms and other insects, on which they feed. They now disperse themselves over the country to breed, and indicate their presence in all directions by the marks of their boring bills, which are seen in such soft and boggy places as are usually sheltered by thickets and woods.



LESSER WOODCOCK.

When flushed or surprised in their hiding places, they only rise in a hurried manner to the tops of the bushes, or glide through the under-growth to a short distance, when they instantly drop down again, and run out for some space on touching the ground, lurking as soon as they imagine themselves in a safe retreat. At times, in open woods, they fly out straight with considerable vigor and swiftness; but the effort, from the shortness of the wing, is always attended with much muscular exertion.

Early in April, the Woodcocks in pairs select a spot for breeding, which is generally in or near some retired part of the same woods which usually affords them their food and shelter. The nest is placed on the ground, in a tuft of grass, or in the protection of some old stump. It is formed with little art, of such withered leaves and old grass as the convenience of the place affords; the eggs are four, rather large, of a dark yellowish-white approaching olive, speckled and confluently blotched with three slightly different shades of dark yellowish-brown spots, most numerous at the greater end.

THE SNIPE.

With the bill long, straight, slender and compressed, soft and flexible. Wings moderate, the first and second primaries nearly of equal length, and longest in the wing. Tail short and rounded, of from twelve to sixteen or more feathers. The head large, compressed, low in front and high behind; the eyes large, placed high and far back in the head, so as to give a stupid appearance to the bird, for which it is indeed characteristic. The tongue long, filiform and

acute. The body compressed and very fleshy. The sexes, with the young, similar in their plumage, but the female a little larger. They moult twice in the year, and the tints are a little more brilliant in summer.



SNIPE.

These birds, nearly nocturnal in their habits and time of feeding, live usually in woods, or in bogs and marshes, and feed on worms insects and other small animals, which they seek in mud or bog-moss by probing down with the sensitive bill, whose extremity possesses, in consequence of its peculiar nervous netting, all the appropriate sense of touch; when this resource fails, and also in common, they seek their prey by turning over the decayed leaves of the forest, under which it may happen to lurk. When pursued they keep close to the ground, and have the infatuation to think that by hiding their head in their feathers, they are concealed from their enemies; when close chased, or suddenly flushed, they start on wing and fly out with great rapidity. The flesh is considered superior to almost any other game.—The species, composed of two or more sub-genera, are spread all over the world, but they generally prefer cold countries for their residence, in which, if temperate, they are often resident the whole year, in other climates they are necessarily migratory from the nature of their food. They nest on the ground; and the eggs are about four.

THE BROWN, OR RED-BREASTED SNIPE.

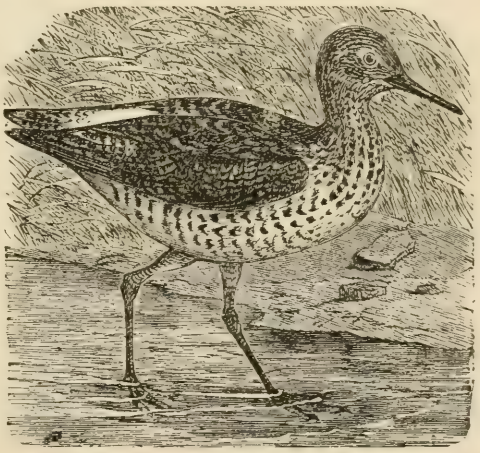
The Red-Breasted Snipe begins to visit the sea coast of New Jersey early in April, arriving from its winter quarters probably in tropical America. After spending about a month on the muddy marshes, and sand flats, left bare by the recess of the tides, a more powerful impulse than that of hunger impels the wandering flocks towards their natal regions in the north, where secluded, from the prying eye of man, and relieved from molestation, they pass the period of reproduction, the wide range of which continues, without interruption, from the borders of Lake Superior to the shores of the Arctic Sea.

The Red-Breasted Snipes are always seen associated in flocks, and though many are bred in the interior around the great northern lakes, they now all assemble towards the sea coast, as a region that affords them an inexhaustible supply of their favorite food of insects, mollusca, and small shell-fish; and here they continue, a succession of wandering and needy bands, until the commencement of cold weather advertises them of the approach of famine; when, by degrees, they recede beyond the southern limits of the Union. While here, they

appear very lively, performing their aerial evolutions over the marshes, sometimes at a great height in the air, uttering at the same time a loud, shrill and quivering whistle, scarcely distinguishable from that of the Yellow Legged Tatler, (something like *'te-te-te, 'te-te-te.*) The same loud and querulous whistling is also made as they rise from the ground, when they usually make a number of circuitous turns in the air, before they descend. At all times gregarious, in the autumn and spring they sometimes settle so close together, that several dozens have been killed at a single shot. While feeding on the shores or sand-bars, they may be sometimes advantageously approached by a boat, of which, very naturally, they have but little fear or suspicion, nor are they at any time so shy as the common Snipe, alighting often within a few rods of the place where their companions have been shot, without exhibiting alarm until harassed by successive firing.

SEMI-PALMATED SNIPE, OR WILLET.

The Willet, as this well known and large species is called, inhabits almost every part of the United States, from the coast of Florida to the distant shores and saline lakes in the vicinity of the Saskatchewan up to the 56th parallel of latitude, where, as they pass the summer, they no doubt propagate there, as well as in the Middle States of the Union. Their appearance in the north of Europe, is merely accidental, like the visit of the Ruff in America, which has, indeed, no better claim in our Fauna, than that of the Willet in Europe, both being stragglers from their native abodes and ordinary migrating circuits. From the scarcity of this species on the shores of Massachusetts Bay, it is more than probable, that their northern migrations are made chiefly up the great valley of the Mississippi; and they have been seen, in the spring, by Mr. Say, near Engineer Cantonment, on the bank of the Missouri. A few straggling families or flocks of the young, are occasionally seen, about the middle of August, on the muddy flats of Cohasset beach; but they never breed in this part of New England, though nests are found in the vicinity of New Bedford.



WILLET.

The Willet probably passes the winter within the tropics, or along

the extensive shores of the Mexican Gulf. About the middle of March, however, their lively vociferations of *pill-will-willet, pill-will-willet*, begin commonly to be heard in all the marshes of the sea islands of Georgia and South Carolina. In the Middle States they arrive about the 15th of April, or sometimes later, according to the season; and from that period to the close of July, their loud and shrill cries, audible for half a mile, are heard incessantly throughout the marshes where they now reside.

OF THE SANDPIPERS IN GENERAL.

THE Sandpipers have a straight and slender bill, about an inch and a half long; small nostrils; and a slender tongue. The toes are divided, or are very slightly connected at the base by a membrane: the hinder toe is short and weak.

THE RUFF AND REEVE.

The Ruff is about a foot in length, with a bill about an inch long. The face is covered with yellow pimples. A few of the feathers of the Ruff stand up over each eye, and appear not unlike ears. The colors of the Ruff are in no two birds alike: in general they are brownish, and barred with black; though some have been seen that were altogether white. The lower parts of the belly and the tail coverts are white. The tail is tolerably long, having the four middle feathers barred with black; the others are pale brown. The legs are of a dull yellow, and the claws black. The female is smaller than the male and of a brown color.

The name of *Ruff* has been given to the male of this species, from the long feathers which stand out on the back part of the head and neck, and which remind a casual observer of the ruffs that were worn by our ancestors. The female, which is called the *Reeve*, is destitute of this singular appendage.

The male bird does not acquire his ruff till the second season; and till that time he is in this respect like the female; as he is also annually from the end of June until the pairing season. After the time of incubation, the long feathers fall off, and the caruncles shrink in under the skin, so as not to be discerned.

The males are much more numerous than the females, and they have many severe contentions for their mates. The male chooses, near a splash of water, on some dry bank, a stand, round which he runs so often, as to make a bare circular path: the moment a female comes in sight, all the males within a certain distance commence a general battle; placing their bills to the ground, spreading the feathers of their neck, and using the same action as a Cock: and this opportunity is seized by the fowlers, who, in the confusion catch them, by means of nets, in great numbers.

An erroneous opinion prevails very generally, that Ruffs when in confinement must be fed in the dark, lest the admission of light should induce them to fight. The fact is, that every bird, even when



RUFF AND REEVE.

kept in a room, takes its stand, as it would in the open air; and if another invade its circle a battle ensues. A whole room full of them may be set into fierce contest by compelling them to shift their stations; but, after the disturber has quitted the place, they have been observed to resume their circles, and become again pacific.

In confinement, their quarrels usually originate in the pan containing their food not being sufficiently large enough to admit the whole party to feed, without touching each other. When the food has been divided into several pans, the birds have continued perfectly quiet.

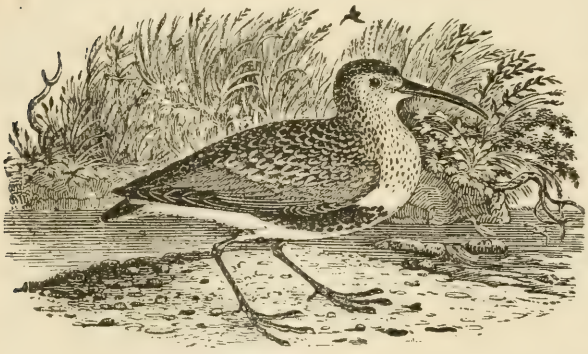
THE TURNSTONE.

The Turnstone is about the size of a Thrush; its bill is black, about an inch in length, and a little turned up at the end. The body is black, variously marked with white and rust-color on the upper parts; the breast and belly are white. The legs are short and orange-colored.

This bird is found on various parts of the English and Scottish coasts, and in North America. It has its name from its custom of turning over stones, in order to prey upon the insects and worms concealed beneath them.

DUNLIN, OR OX-BIRD.

The Dunlin or Red-backed Sandpiper of the United States, according to the season of the year, is met with throughout the northern hemisphere; penetrating, in America, during the summer season, to the utmost habitable verge of the Arctic circle, and even breeding in that remotest of lands, the ever wintry shores of Melville Peninsula. They likewise inhabit Greenland, Iceland, Scandinavia, the Alps of Siberia, and the coasts of the Caspian. In the southern hemisphere, they sometimes even wander as far as the Cape of Good Hope; and are found in Jamaica, other of the West India Islands, and Cayenne. In the autumn they are seen around Vera Cruz, and with other Sandpipers probably, exposed for sale in the market of Mexico. At the same time, many, as the Purres in their winter dress, remain through the greatest part of the winter within the milder limits of the Union, frequenting, at times, in great numbers, the coasts of both Carolinas during the month of February; flitting, probably, to and fro with every vaccillating change of temperature, being naturally vagabond, and nowhere fixed for any considerable time, until their arrival at the



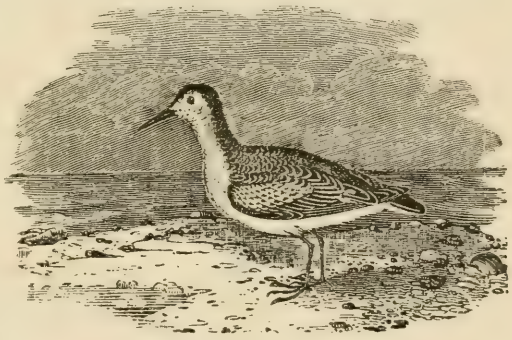
DUNLIN.

ultima thule of the continent, where they barely stay long enough to rear a single brood, destined, as soon as they are able, to wander with the rest, and swell the aërial host, whose sole delight, like the untiring Petrels of the storm, or the ambitious Albatross, is to be in perpetual action; and are thus, by their associated numbers, obliged perpetually to rove in quest of their transient, periodical, and varying prey.

In the middle States, the Dunlins arrive on their way to the north in April and May; and in September and October, they are again seen pursuing the route to their hybernal retreat in the south. At these times they often mingle with the flocks of other strand birds, from which they are distinguishable by the rufous color of their upper plumage. They frequent the muddy flats and shores of the salt marshes, at the recess of the tide, feeding on the worms, insects and minute shell-fish which such places generally afford. They are also very nimble on the strand, frequenting the sandy beaches which bound the ocean, running and gleaning up their prey with great activity, on the reflux of the waves.

WILSON'S SANDPIPER.

This small, and nearly resident species, may be considered as the most common and abundant in America, inhabiting the shores and marshes of the whole continent, both to the north and south of the equator; retiring probably, with the inclemency of the season, indifferently, from either frigid circle, towards the warmer and more hospitable regions within the tropics. They are consequently seen, spring and autumn, in all the markets of the Union, as well as in those of the West Indies, Vera Cruz, and in the interior as far as Mexico. Captain Cook also found them on the opposite side of the continent, frequenting the shores of Nootka Sound. The great mass of their pigmy host retire to breed within the desolate lands of the Arctic circle, where, about the 20th of May, or as soon as the snow begins to melt, and the rigors of the long and nocturnal winter relax, they are again seen to return to the shores and swampy borders of their native lakes in the inclement parallel of 66°. Though shy and quailing on their first arrival, with many other aërial passengers of like habits, they contribute to give an air of life and activity, to these most dreary, otherwise desolate, and inhospitable regions of the earth. Endowed



WILSON'S SANDPIPER.

with different wants and predilections from the preceding hosts, whose general livery they wear, they never seemingly diverge in their passage so far to the eastward as to visit Greenland, and the contiguous extremity of northern Europe, being unknown in the other continent; and migrating always towards the south, they have thickly peopled almost every part of the country that gave them birth.

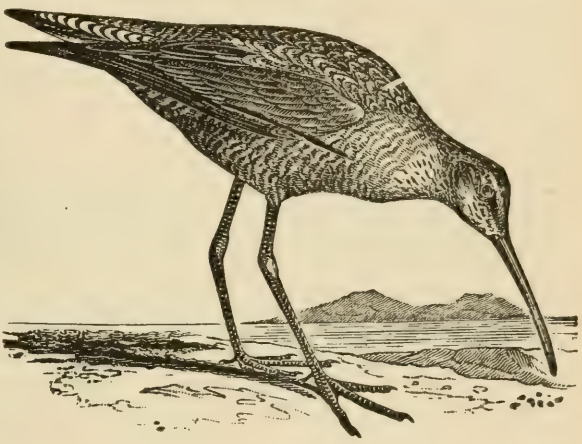
The Peeps as they are here called, are seen in the salt marshes around Boston, as early as the 8th of July; indeed, so seldom are they absent from us in the summer season, that they might be taken for denizens of the State, or the neighboring countries, did we not know that they repair, at an early period of the spring, to their breeding resorts in the distant north; and that, as yet, numerous and familiar as they are, the nest, and history of their incubation, is wholly unknown.

When they arrive, now and then accompanied by the semipalmated species, the air is sometimes, as it were, clouded with their flocks. Companies led from place to place, in quest of food, are seen whirling suddenly in circles, with a desultory flight, at a distance resembling a swarm of hiving Bees, seeking out some object on which to settle. At this time, deceiving them by an imitation of their sharp and querulous whistle, the fowler approaches, and adds destruction to the confusion of their timorous and restless flight. Flocking together for common security, the fall of their companions, and their plaintive cry, excites so much sympathy among the harmless Peeps, that, forgeting their own safety, or not well perceiving the cause of the fatality, which the gun spreads among them, they fall sometimes into such a state of confusion, as to be routed with but little effort, until the greedy sportsman is glutted with his timorous and infatuated game. When much disturbed, they however, separate into small and wandering parties, where they are now seen gleaning their fare of larvæ, worms, minute shell-fish, and insects in the salt marshes, or on the muddy and sedgy shores of tide rivers and ponds. At such times they may be very nearly approached, betraying rather a heedless familiarity, than a timorous mistrust of their most wily enemy; and even when rudely startled, they will often return to the same place in the next instant, to pursue their lowly occupation of scooping in the mud, and hence probably originated the contemptible appellation of *humility*, by which they and some other small birds of similar habits have been distinguished. For the discovery of their food, their flexible and sensitive awl-like bills are probed into the mire, marshy soil, or wet sand, in the manner of the Snipe and Woodcock, and in this way they discover and rout from their hidden retreats, the larvæ and soft worms which form a principal part of their fare. At other times, they also give chase to insects, and pursue their calling with amusing alacrity. When, at length startled, or about to join the company they have left, a sharp, short and monotonous whistle, like the word *peet*, or *pēep* is uttered, and they, instantly take to wing, and course along with the company they had left. On seeing the larger marsh birds feeding, as the Yellow-Shanks and others, a whirling flock of the Peeps will descend amongst them, being generally allowed to feed in quiet; and on the approach of the sportsman, these little timorous

rovers are ready to give the alarm. At first a slender *peep* is heard, which is then followed by two or three others, and presently *peet 'pip pip 'p'p* murmurs in a lisping whistle through the quailing ranks, as they rise swarming on the wing, and inevitably entice with them their larger but less watchful associates.

DOUGLAS'S STILT SANDPIPER.

According to Dr. Richardson, this species is not uncommon in th fur countries of Upper Canada, to the 60th parallel, and perhaps still further north. It exhibits the usual habits of the genus *Tringa*, frequents the interior marshes in the breeding season, and in the autumn resorts in flocks to the flat shores of Hudson's Bay, previous to taking its departure for the south.



DOUGLAS'S STILT SANDPIPER.

OF THE PLOVERS IN GENERAL.

THE Plovers have a straight, somewhat cylindrical and obtuse bill, seldom longer than the head. The feet are formed for running, with three toes, all placed forward.

The Plovers generally associate in small flocks, and the whole emigrate in companies of greater or less extent; the young collect together, pursuing their route apart from the old, and after their departure. They live principally upon small worms, and aquatic insects. The common species, and the *Guignard*, frequent the marshes and muddy borders of the larger and smaller rivers, and rarely frequent sea shores; the other species live more habitually upon the coasts, and near the outlets of streams. The moult in most of the species is double, and the sexes are scarcely distinguishable by any exterior markings, except in the *C. cantianus*, in which the moult is only annual, and the sexes distinguishable by their livery. Some exotic species of the genus bear spines upon the shoulders of the wings, being, in fact, an approach towards the development of claws on the anterior extremities! several other species have fleshy excrescences upon the head or mandibles.

THE DOTTEREL.

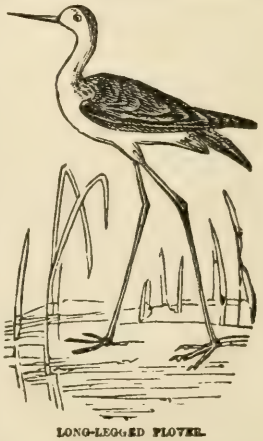

DOTTEREL.

The length of the Dotterel is about ten inches. The bill is not quite an inch long, and is black. The forehead is mottled with brown and gray: the top of the head is black; and over each eye there is an arched line of white, which passes to the hind part of the neck. The cheeks and throat are white: the back and wings are of a light brown, inclining to olive, each feather margined with pale rust-color. The fore part of the neck is surrounded by a broad band of light olive-color, bordered below with white. The breast is of a pale dull orange; the middle of the belly black; and the rest of the belly and thighs are of a reddish white. The tail is olive brown, black near the end, tipped with white; and the outer feathers are margined with white. The legs are of a dark olive.

These birds are migratory; appearing in flocks of eight or ten, about the end of April, and continuing all May and June, when they become very fat, and are much esteemed for the table.

The Dotterel is in its manners a singular bird, and may be taken by an extremely simple artifice. The country people are said sometimes to go in quest of it, in the night, with a lighted torch or candle; and the bird, on these occasions, will mimic the actions of the fowler with great archness. When he stretches out an arm, it stretches out its wing; if he move a foot, it moves one also; and every other motion it endeavors to imitate.

THE STILT, OR LONG LEGGED PLOVER.


LONG-LEGGED PLOVER.

The Stilt, though rare and accidental in its visits in the colder climates, is not uncommon in eastern Europe, along the borders of lakes in Hungary, and in the interior of Asia, where, as well as in Mexico and Brazil, and sometimes in Germany and France, it is known to pass the period of reproduction. In Egypt, where it arrives in October, it probably passes the winter. According to Temminck, it was known to nest in the marshes near Abbeville in 1818, but their general resort for breeding is in the vast saline marshes of Hungary and Russia. Being a native of regions contiguous to the southern limits of the United States, there is little doubt but that it visits the whole shores of the Mexican Gulf. Its habits are altogether maritime, and it is said to feed on the spawn of fish, tadpoles, gnats, flies and other aquatic insects. The legs of this bird are remarkably

slender, and longer, perhaps in proportion, than in any other known bird, it consequently staggers and reels in its gait, while balancing itself on its stilt-like legs.



STILT BIRD.

THE BLACK-NECKED STILT.

The Black-necked Stilt is common to many parts of South as well as North America; it is known at any rate to inhabit the coast of Cayenne, Jamaica, and Mexico. In the United States, it is seldom seen but as a straggler as far to the north as the latitude of 41°. About the 25th of April, according to Wilson, they arrive on the coast of New Jersey in small flocks of twenty or thirty together. These again subdivide into smaller parties, but they still remain gregarious through the breeding season. Their favorite residence is in the higher and more inland parts of the greater salt marshes, which are interspersed and broken up with shallow pools, not usually overflowed by the tides during summer. In these places they are often seen wading up to the breast in water, in quest of the larvæ, spawn, flies, and insects, which constitute their food.

In the vicinity of these bare places, among thick tufts of grass small associations of six or eight pair, take up their residence for the breeding season. They are, however, but sparingly dispersed over the marshes, selecting their favorite spots; while in large intermediate tracts, few or none are to be seen. Early in May, they begin to make their nests, which are at first slightly formed of a mere layer of old grass just sufficient to keep the eggs from the moisture of the marsh

in the course of incubation, however, either to guard against the rise of the tides, or for some other purpose, the nest is increased in height with the dry twigs of salt marsh shrubs, roots of grass, sea-weed, and any other coarse materials which may be convenient, until the whole may now weigh two or three pounds. The eggs, four in number, are of a dark yellowish drab, thickly marked with large blotches of brownish-black. These nests are often situated within fifteen or twenty yards of each other, the respective proprietors living in mutual friendship.

THE SANDERLING PLOVER.

The Sanderlings, in accumulating flocks, arrive on the shores of Massachusetts from their remote northern breeding places towards the close of August. They are seen also about the same time on the coast of New Jersey, and still farther to the south, where they remain throughout the greater part of the winter, gleaning their subsistence exclusively along the immediate borders of the ocean, and are particularly attached to sandy flats, and low sterile, solitary coasts, divested of vegetation, and perpetually bleached by the access of tides and storms; in such situations they are often seen in numerous flocks, running along the strand, busily employed in front of the moving waves, gleaning with agility, the shrimps, minute shell-fish, marine insects, and small moluscous animals, which ever recurring accident throws in their way. The numerous flocks, keep a low circling course along the strand, at times uttering a slender and rather plaintive whistle, nearly like that of the smaller Sandpipers. On alighting, the little active troop, waiting the opportunity, scatter themselves about in the rear of the retiring surge, the succeeding wave then again urges the busy gleaners before it, when they appear like a little pigmy army passing through their military evolutions; and at this time the wily sportsman, seizing his opportunity, spreads destruction among their timid ranks: and so little are they aware of the nature of the attack, that, after making a few aerial meanders, the survivors, pursue their busy avocations with as little apparent concern as at the first.



SANDERLING PLOVER.

THE COMMON, OR GOLDEN PLOVER.

The Common Plover is, according to the season of the year, met with in almost every part of the world. They arrive on the coast of the middle and northern states in spring and early in autumn. Near to Nantasket and Chelsea beach, they are seen, on their return from their inclement natal regions in the north, by the close of August, and the young remain in the vicinity till about the middle of October.



GOLDEN PLOVER.

or later, according to the state of the weather. They live principally upon land insects, or the larvæ and worms they meet with in the saline marshes, and appear very fond of grasshoppers. About the time of their departure they are, early in a morning, seen sometimes assem-

bled by thousands, but they all begin to disperse as the sun rises, and at length disappear high in the air for the season. They usually associate, however, in small flocks and families, and when alarmed, while on the wing, or giving their call to those who are feeding around them, they have a wild, shrill and whistling note, and are at most times timid, watchful, and difficult to approach. Though they continue associated in numbers for common safety during the day, they disperse in the evening, and repose apart from each other. At daybreak, however, the feeling of solitude again returns, and the early sentinel no sooner gives the shrill and well-known *call* than they all assemble in their usual company. At this time, they are often caught in great numbers by the fowler, with the assistance of a clap-net, stretched before dawn in front of the place they have selected to pass the night. The fowlers now surrounding the spot, prostrate themselves on the ground when the call is heard, and as soon as the birds are collected together, they rise up from ambush, and by shouts, and the throwing up of sticks in the air, succeed so far in intimidating the Plovers that they lower their flight, and thus striking against the net, it falls upon them. In this, and most other countries, their flesh, in the autumn, and particularly that of the young birds, is esteemed as a delicacy, and often exposed for sale in the markets of the principal towns.

OF THE RAIL TRIBE.

The bill is thickest at the base, attenuated on the back towards the tip, compressed, a little incurved, and pointed. The tongue is rough at the tip. The body is compressed, and the tail short. The feet have each four toes.

The Rails are shy, solitary, and very timid birds, generally residing in reedy and sedgy marshes, in the vicinity of fresh and still waters, provided with a deep covert of shrubs, rushes and rank herbage. When surprised they run much oftener than fly, and skim over watery places with great agility, on the surface of the leaves of aquatic plants, rather than swim, which they seldom do from choice, though they also dive well, or when wounded, and can remain long under the water. Though their flight is ordinarily so limited, they yet perform extensive migrations. They walk with ease and swiftness; and rarely alight anywhere but on the ground. As they are chiefly nocturnal in their motions, they remain concealed, throughout the greatest part of the day, chiefly in wet and grassy places, and turn out in quest of food in the morning or evening, or by the advantage of the moonlight. In the breeding season, however, the monogamous parents and the brood they have jointly hatched, are not unfrequently seen abroad by day. They breed in marshes and thickets, nesting near waters, sometimes even forming a nest to float, and attaching it to the contiguous reeds. They feed upon worms, soft insects, as well as upon vegetables, and their seeds. Species are to be found to inhabit every part of the world.

THE LAND RAIL.

The bill of the Land Rail is short, strong, and thick. The feathers on the crown of the head, the hind part of the neck, and the back, are black, edged with bay. The coverts of the wings are of the same color; but not spotted. The tail is short and of a deep bay. The belly is white, and the legs are ash-colored. These birds generally weigh from six to eight ounces.



LAND RAIL.

The harsh cry of this bird, which somewhat resembles the word, *crek*, *crek*, *crek*, is by no means unlike the noise made by stripping forcibly the teeth of a large comb under the fingers. It is chiefly heard in the summer season, among the long grass and corn. Here the bird constantly skulks, hidden by the thickest part of the herbage, winding and doubling, in every direction, in such manner that it is generally difficult for any person to come near it. When hard pushed by the sportsman or his dogs, it sometimes stops short, and its too eager pursuers overshoot the spot, and lose all trace of it.

Ill-calculated as, from the shortness of its wings, and the position and length of its legs, this bird appears to be for flight, it certainly is able to fly with considerable swiftness. It is, in general, very unwilling to rise from the ground; and such is its timidity, that it will sometimes squat so close as to suffer itself to be taken up into the hand rather than rise.

It is a bird of passage, generally making its appearance about the same time with the Quail.

It appears that Land Rails frequent the fields more for the sake of snails, slugs, and other vermes which abound in such places, than for the grain or seeds they might find there.

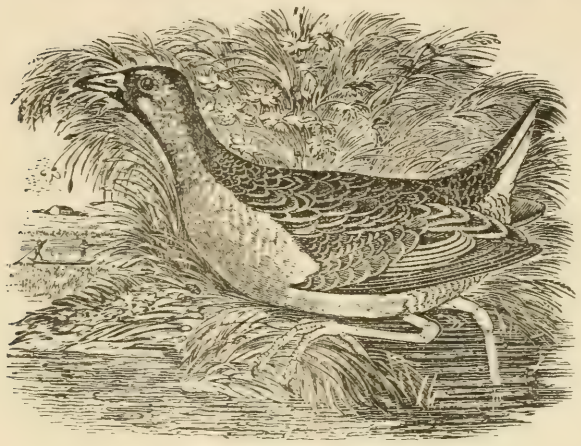
The female constructs her nest on the ground, of moss and dry grass, negligently put together. The number of eggs is generally about ten or twelve, of a pale ash-color, marked with ferruginous spots. The young-ones are able to run as soon they have burst the shell.

THE CAROLINA RAIL.

The Soiree, or Common Rail of America, which assemble in such numbers on the reedy shores of the larger rivers, in the Middle and adjoining warmer States, at the approach of autumn, and which afford such abundant employ to the sportsman, at that season, like most of the tribe to which it belongs, is a bird of passage, wintering generally south of the limits of the Union. They begin to make their appearance, in the marshes of Georgia, by the close of February; and, on the 2d

of May, Wilson observed them in the low watery meadows below Philadelphia.

Like the other migrating waders, the Rails, accompanied by their swarming broods, bred in the north and west, begin to show themselves on the reedy borders of the Delaware, and on other large waters of the Middle States, whose still and sluggish streams, spreading out over muddy flats, give birth to an abundant crop of the seeds of the Wild Rice, now the favorite food of the Rails and the Rice or Reed Birds. On first arriving, from the labor and privations incident to their migrations, they are lean, and little valued as food; but as their favorite natural harvest begins to swell out and approach maturity, they rapidly fatten; and, from the middle of September to the same time in October, they are in excellent order for the table, and eagerly sought after wherever a gun can be obtained and brought into operation.



THE CAROLINA RAIL.

The usual method of shooting Rail on the Delaware, according to Wilson, is as follows. The sportsman proceeds to the scene of action in a batteau, with an experienced boatman, who propels the boat with a pole. About two hours before high water, they enter the reeds, the sportsman taking his place in the bow ready for action; while the boatman on the stern seat pushes her steadily through the reeds. The Rails generally spring singly, as the boat advances, and at a short distance ahead, are instantly shot down, while the boatman, keeping his eye on the spot where the bird fell, directs the vessel forward, and picks it up as the gunner is loading. In this manner the boat continues through and over the wild-rice marsh, the birds flushing and falling, the gunner loading and firing, while the helmsman is pushing and picking up the game; which sport continues till an hour or two after high water, when its shallowness, and the strength and weight of the floating reeds, as also the unwillingness of the game to spring as the tide decreases, oblige them to return. Several boats are sometimes within a short distance of each other, and a perpetual cracking of musketry prevails along the whole reedy shores of the river. In these excursions, it is not uncommon for an active and expert marksman to kill ten or twelve dozen in the serving of a single tide.

THE PURPLE GALLINULE.

This very splendid, but incongruous species of Gallinule, is in the United States, a bird of passage, wintering in tropical America, and passing the summer, or breeding season in the marshes of Florida and the contiguous parts of the State of Georgia, where it arrives in the latter part of April, retiring south with its brood, in the course of the autumn, and probably winters, according to its habits, in the swampy maritime districts along the coast of the Mexican Gulf.



PURPLE GALLINULE.

The Martinico Gallinule, while in the Southern States, frequents the rice-fields, rivulets, and fresh water pools, in company with the more common Florida species. It is a vigorous and active bird, bites hard when irritated, runs with agility, and has the faculty, like the Sultanas, of holding on objects very firmly with its toes, which are very long, and spread to a great extent. When walking, it jerks its tail like the common Gallinule. In its native marshes it is very shy and vigilant, and continually eluding pursuit, can only be flushed with the aid of a dog

OF THE FLAMINGO TRIBE.

The Flamingoes combine the characters of the two Linnæan orders, the Waders and the Swimmers. They have long necks and legs. Their bill is thick, large, and bending in the middle. The higher part of the upper mandible is keel-shaped: the lower compressed. The edges of the upper mandible are sharply indented; those of the lower transversely furrowed. The nostrils are covered above with a thin plate, and are pervious. The tongue is cartilaginous, and pointed at the end; the middle part is muscular, and the upper part acculeated

The neck is long. The legs and thighs are of great length: the feet are webbed; and the back toes very small.

THE RED FLAMINGO.

The body of the Red Flamingo is about the size of that of a Goose; but its legs and neck are of such extraordinary length, that when it stands erect it is upwards of six feet in height. The body is of a beautiful scarlet. It is an inhabitant of those parts of America that are as yet but thinly peopled.



RED FLAMINGO.

When the Europeans first visited America, they found the Flamingoes on the shores tame and gentle, and no way distrustful of mankind. If one of them was killed, the rest of the flock, instead of attempting to fly, only regarded the fall of their companion with a kind of fixed astonishment: another and another shot was discharged; and thus the fowler often levelled the whole flock, without one of them attempting to escape. Now, however, they regard us with aversion. Wherever they haunt, one of the number, it is said, is always appointed to watch while the rest are employed in feeding; and the moment he perceives the least danger, he gives a loud scream, in sound not unlike a trumpet, and instantly the whole flock is on wing. They feed in silence; but, when thus roused, they all join in the noise, and fill the air with their screams.

Their nest is of a singular construction. It is formed of mud, in the shape of a hillock, with a cavity at the top. In this the female generally lays two white eggs, of the size of those of a goose, but longer. The hillock is of such a height as to admit of the bird's sitting on it, or rather standing, as her legs are placed one on each side, at full length. Linnæus tells us that she will sometimes lay her eggs on the projecting part of a low rock, if it happen to be sufficiently convenient to admit of the legs being placed in this manner on each side.

It is not until a long time after they are hatched that the young



ones are able to fly; but they can previously run with amazing swiftness. They are sometimes caught at this age; and, very different from the old ones, they suffer themselves to be carried away, and are easily tamed. In five or six days they become familiar, and will even eat out of the hand; and they drink a surprising quantity of sea-water. But, though easily rendered domestic, it is difficult to rear them; as they are apt to decline, from the want of their natural food.

Flamingoes are often met with in the warmer parts of the Old Continent; and, except in the breeding-time, they are generally found in great flocks. When seen at a distance, they appear like a regiment of soldiers; being often ranged alongside of one another on the



FLAMINGOES ON THEIR NESTS.

borders of rivers, searching for food, which consists principally of small fish and water-insects: these they take by plunging the bill and part of the head into the water; and from time to time trampling the bottom with their feet, to disturb the mud in order to raise up their prey. In feeding, they are said to twist their neck in such a manner, that the upper part of the bill is applied to the ground.

These beautiful birds were much esteemed by the Romans, who often used them in their grand sacrifices and sumptuous entertainments. Their flesh is thought tolerably good food; and the tongue was considered by the ancients as among the most delicate of all eatables. Pliny, Martial, and many other writers speak of it in high terms of commendation.



SACRED IBIS.

THE SACRED IBIS.

The Sacred Ibis inhabits Egypt, but does not seem to breed there. This is the bird so frequently depicted in the hieroglyphics as playing a conspicuous part in religious ceremonies. Their mummies are constantly found in the tombs, and in one of these mummies Cuvier discovered remnants of skin, and scales of snakes. It is a migratory bird, appearing simultaneously with the rise of the Nile, and departing as the inundation subsides. The Sacred Ibis is about the size of an ordinary fowl.

THE SCARLET IBIS.

This brilliant and exclusively American species inhabits chiefly within the tropics, abounding in the West India and Bahama Islands, and south of the equator, at least, as far as Brazil. In the adult bird the plumage is of a uniform bright scarlet, only varied by the blackish brown on the outer web and tips of the quills. The length is twenty-four inches, the wing measures ten inches and the tail three inches. The flight of this Ibis is lofty and strong, and it utters a loud and peculiar cry as it passes through the air. They migrate in the summer (about July and August), into the States of Florida, Alabama, Georgia, and South Carolina; but retire into Mexico, or the Caribbean Islands, at the approach of cool weather. They generally associate in numbers, frequenting the borders of the sea, and the banks and estuaries of neighboring rivers, feeding on small fry, shell-fish, crustacea, worms, and insects, which they collect at the ebbing of the tide. They are said to be in the habit of perching on trees in companies; but lay their eggs, which are greenish, on the ground, amidst the tall grass of the marshes, on a slight nest of leaves. When just hatched the young are black, soon changing to gray, but are nearly white before they are able to fly; by degrees they attain their red plumage, which is not complete until the third year. The young and old associate in distinct bands. In the countries where they abound they are sometimes domesticated, and accompany the poultry. The Ibis shows great courage in attacking the fowls, and will even defend itself from the insidious attacks of the cat. It is generally esteemed as good food; and its rich and gaudy plumage is used by the Brazilians for various ornaments.

THE AVOCET.

The bill in the genus Recurvirostra is exactly the reverse of that in the genus Cracticornis, the curve being upwards instead of downwards. The common Avocet is spread throughout the warmer regions of Europe, and is also found in some parts of Africa. It is very common in Holland, and is frequently seen on the eastern coasts

of England, but seldom visits Scotland. It frequents marshes and the mouths of rivers, where it finds in the mud myriads of the small worms and insects on which it feeds, and which it obtains by scooping them up from the mud with its curiously curved bill. It is a good swimmer, but seldom has recourse to that art except when it wades unexpectedly out of its depth.



AVOCET.

The eggs of the Avocet are laid on the ground, in a depression sheltered by a tuft of herbage Their color is a bluish green, spotted with black. The birds when disturbed at their nests feign lameness, like the Lapwing, in order to draw the intruder to a distance. The length of the bird is eighteen inches.

THE AMERICAN AVOCET.

The American Avocet, supposed to winter in tropical America, arrives on the coast of Cape May, in New Jersey, late in April, where it rears its young, and with them again retires to the south, early in October. In the months of spring they were observed by Mr. Say, in the lower part of Missouri. They are also known to visit Nova Scotia, though scarcely ever seen in the State of Massachusetts. Doctor Richardson also found them abundant in the Saskatchewan plains, as far as the 53rd parallel, where they frequent shallow lakes, feeding on insects, and fresh water crustacea. In New Jersey, they seem to have a predilection for the shallow pools of the salt marshes, wading about often, in search of their prey, which consists of marine worms, small paludinas, turbos, &c., to which, like the European species, they sometimes add, small *Fuci*, or marine vegetables



AMERICAN AVOCET.

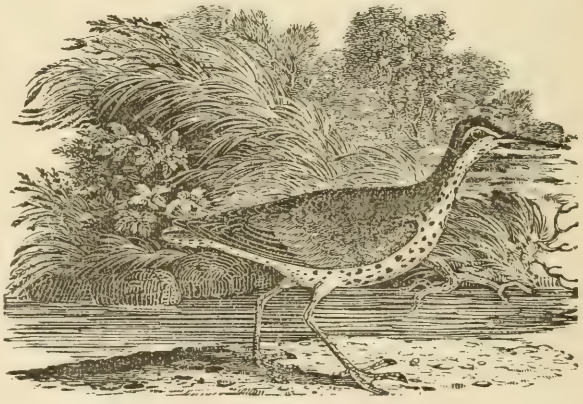
THE ROSEATE SPOONBILL.

The Red or American Spoonbill chiefly dwells within the tropical regions of the continent, being common in Jamaica, and other of the West India Islands, as well as in Mexico, Guiana, and Brazil.

According to the relation of Captain Henderson, in his account of Honduras, this species is more maritime in its habits than that of Europe, as it wades about in quest of shell fish, marine insects fry and small crabs;

THE SPOTTED TATLER, OR PEET WEET.

The Peet Weet, is one of the most familiar and common of all the New England marsh birds, arriving along our river shores and low meadows, about the beginning of May, from their mild or tropical winter quarters, in Mexico, and probably the adjoining islands of the West Indies. By the 20th of April, Wilson observed their arrival on the shores of the large rivers in the State of Pennsylvania. They migrate and breed from the Middle States, in all probability, to the confines of the St. Lawrence, or further; but were not seen by Dr. Richardson, or any of the Arctic expeditions, in the remote boreal regions, or around Hudson's Bay, as had been asserted by Hutchinson. It is also an accidental visitor in the old continent, being sometimes observed on the coasts of the Baltic, and in Germany, but still more rarely in Great Britain. As to residence, therefore, the Spotted Tatler may be considered as exclusively American, and confined chiefly to the limits of the more temperate parts of the Union.



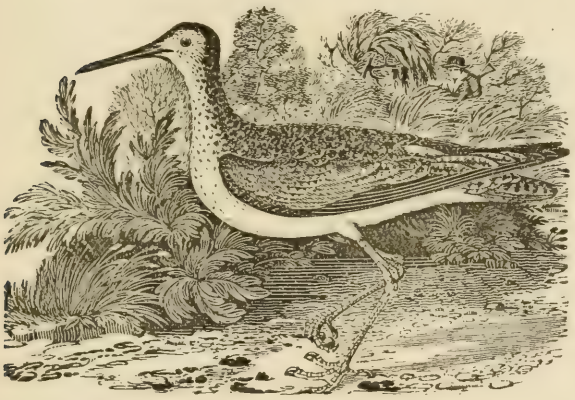
SPOTTED TATLER.

As soon as the Peet Weet arrives on the coasts, small roving flocks are seen, at various times of the day, coursing rapidly along the borders of our tide water streams, flying swift and rather low, in circuitous sweeps along the meanders of the creek or river, and occasionally crossing from side to side, in rather a sportive and cheerful mien, than as the needy foragers they appear at the close of autumn. While flying out in these wide circuits, agitated by superior feelings to those of hunger and necessity, we hear the shores re-echo the shrill and rapid whistle of *'weet, 'weet, 'weet, 'weet,* and usually closing the note

with something like a warble, as they approach their companions on the strand. The cry then varies to *'peet, weet weet weet*, beginning high and gradually declining into a somewhat plaintive tone. As the season advances, our little lively marine wanderers often trace the streams some distance into the interior, nesting usually in the fresh meadows among the grass, sometimes even near the house, and I have seen their eggs laid in a strawberry bed, and the young and old pleased with their allowed protection, familiarly fed and probed the margin of an adjoining duck pond, for their usual fare of worms and insects.

THE YELLOW SHANKS TATLER.

The Yellow Shanks, in certain situations, may be considered as the most common bird of the family in America. Its summer residence or breeding station, even extends from the Middle States to the northern extremity of the continent, where it is seen, solitary or in pairs, on the banks of rivers, lakes, or in marshes, in every situation contiguous to the ocean. And though the young and old are found throughout the warm season of the year in so many places, the nest and eggs are yet entirely unknown. Calculating from the first appearance of the brood abroad, they commence laying by the middle of June, and are seen in this neighborhood at that season. It resides chiefly in the salt marshes, and frequents low flats and estuaries, at the ebb of the tide, wading in the mud, in quest of worms, insects, and other small marine and fluvatile animals. They seldom leave these maritime situations, except driven from the coast by storms, when they may occasionally be seen in low and wet meadows, as far inland as the extent of tide-water. The Yellow-Shanks has a sharp whistle of three or four short notes, which it repeats when alarmed and when flying, and sometimes utters a simple, low, and rather hoarse call, which passes from one to the other, at the moment of rising on the wing. It is very impatient of any intrusion on its haunts, and thus often betraying, like the preceding, the approach of the sportsman to the less vigilant of the feathered tribes, by flying around his head, with hanging legs and drooping wings, uttering its incessant and querulous cries.



YELLOW SHANKS TATLER

THE GREAT MARBLED GODWIT

The Marbled Godwit is only a transient visitor along the sea coasts of the United States, in the spring and fall, on its way to and from its breeding place in the north. According to Richardson, they abound in the summer season in the interior of the fur countries, being particularly plentiful on the Saskatchewan plains, where it frequents marshes and bogs, walking on the surface of the swamp moss, (*Sphagna*,) and thrusting down its bill to the nostrils in quest of worms and leeches, which it discovers by the sensitive point of its bill, thus finding means to obtain a kind of food which would otherwise be imperceptible to any other sense. They, no doubt, likewise vary their fare, and feed also upon insects, and larvæ. They arrive on the coasts of the Middle States in the month of May, and linger on till some time in June. Many, however, at this time, have already arrived at their ultimate destination in the north, so that it is not improbable but some of these Godwits may breed in more temperate regions to the west as well as north, selecting the high plains of the Rocky Mountains, in situations sufficiently moist. At all events, they are seen in the lower part of Missouri, in the course of the spring, but migrate, like most other waders, along the sea coast, in the way to their tropical winter quarters.



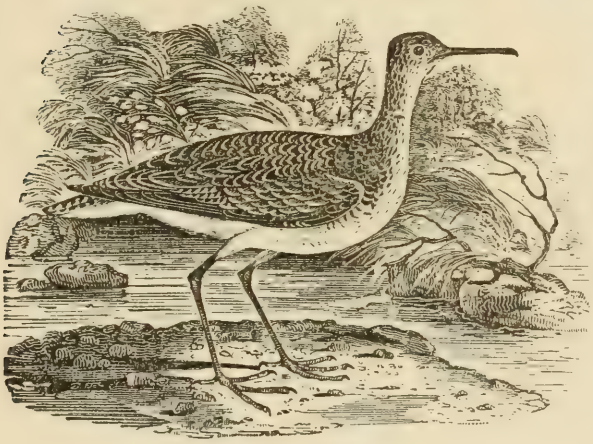
GREAT MARBLED GODWIT.

The Marbled Godwit, in large flocks, appears in the salt marshes of Massachusetts, about the middle of August, particularly towards the eastern extremity of the Bay, around Chatham, and the Vineyard; their stay is, however, very short, and they, at the same time, no doubt, visit the eastern coast of Long Island. On these occasions, they are assembled by many hundreds together, and usually associate with the Short Billed Curlews, they themselves being called Red Curlews; though here they are distinguished by the name of Doe-birds, and, being at this season fat, are highly esteemed for the table. They

are very shy and cautious, but when once confused by the fall and cries of any of their companions, great destruction may be made among them before they recover from the delusion; they thus make repeated circuits round the wounded and complaining, and may also be enticed within gunshot, by imitating their whistling call in the manner of the Curlew. Indeed, without some contrivance of this kind, they can seldom ever be approached, They are seen it appears, in the Middle States as late as October, or November, but are not met with on the Massachusetts coast beyond the close of September.

BARTRAM'S TATLER.

Bartram's Tatler, known here by the name of the Upland Plover, so very distinct from the rest of the tribe with which it is associated in the systems, is one of the most common birds along the sea coast of Massachusetts, making its appearance with its fat and well-fed brood, as early as the 20th of July, becoming more abundant towards the middle of August, when the market of Boston is amply supplied with this delicate and justly esteemed game.



BARTRAM'S TATLER.

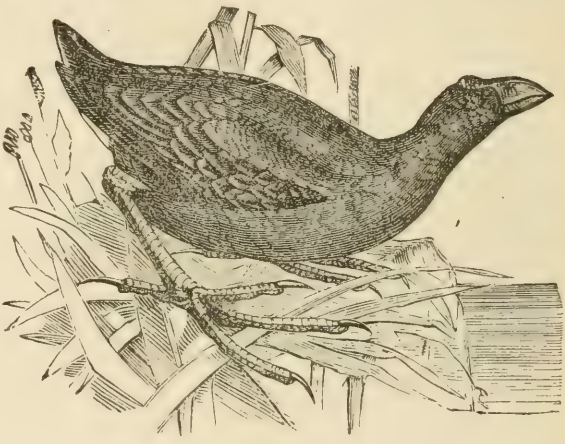
According to the season of the year, they are found throughout the continent, many retiring south of the equator to pass the winter. They are observed in May, already busily gleaning coleopterous insects on the remote boreal plains of the Saskatchewan, and abound in the extensive prairies west of the Mississippi. At this time, and in June, they are seen common also, in Worcester county, (Mass.) and are believed to breed there. They are equally frequent on the plains of Long Island and New Jersey, and in similar bare and dry pastures in various parts of Massachusetts, particularly about Sekonk, and in Rhode Island, near to the sea-coast, where they pass the greater part of the summer. Wilson, who first described the species, met with it in the meadows of the Schuylkill, pursuing insects among the grass with great activity. As a straggler, it has been seen, though very rarely, in Germany or Holland.

The breeding range of this species, extends, in all probability from Pennsylvania to the fur countries of Upper Canada, as well as

westward, on either side of the Mississippi. Scattering broods and nests, made in dry meadows, are not uncommon a few miles from Salem, where Mr. N. West informs me, he saw the young just fledged, in the month of July.

THE COOT.

The Coot much resembles the Water-hen in its habits. It is usually found in large sheets of water, particularly if sheltered by trees. The nest is a huge mass of flags, reeds, and grass, usually at the water's edge, but sometimes actually in the water. In 1849 I took five Coot's eggs from a nest situated at the Reservoir near Swindon. The nest was nearly fifty yards from the bank, and was made on a very small sunken hillock, in three feet water. In the nest are from seven to ten greenish white eggs, spotted with brown.



COOT.

THE CRESTED GREBE, OR GAUNT.

The Crested Grebe, inhabiting the northern parts of both the old and new continents, is met with in Iceland, northern Europe, and the cold as well as temperate parts of Siberia; in winter passing south as far as Italy, and along the coasts of the Mediterranean. In America they are found in all the secluded reedy lakes of the mountainous and woody districts, in the remote fur countries around Hudson's Bay. This species is also common in some parts of England, where it is known by the provincial name of Cargoose, or Gaunt They breed in the meres of Shropshire and Cheshire, and in the eastern fen of Lincolnshire. They also pass the period of reproduction in some of the Scottish Isles, particularly in Zetland, and are abundant in Germany, Holland, and France. In the United States they are only seen in winter, proceeding leisurely towards the south, as the severity of the season increases, often migrating by water, rather than on the wing, and keeping generally at no great distance from the sea, or tide-water estuaries, thus securing their retreat from the surprise of sudden and severe frost.



CRESTED GREBE AND YOUNG.

The nest of the Crested Grebe, concealed among the reeds and flags of the ponds in which they dwell in the summer, is made of rushes, and the coarse aquatic herbage contiguous to the chosen spot, and so constructed as often to float about on the rise of the surrounding water which penetrates it, notwithstanding which the female still sits steadfastly on the floating habitation, defended securely from the access of the water, by the density of her oily and downy plumage. The eggs, three or four, are of a whitish-green, waved, or, as it were, soiled with deep brown. The young are fed with small eels and fry.

Their food consists of fish, fry, coleoptera, marine worms, and often, in part, of vegetables. In Canada, from their remarkable agility in diving, they are known by the name of Water Witches, and are here called Dippers, as they plunge beneath the water on the least appearance of danger, depending very little on their wings for safety; and when most disturbed seldom fly farther than from one side of the pool to the other. The young are said to be common in the winter season, in small flocks, on the lake of Geneva, in Switzerland, and are killed for the sake of their beautiful skins; the under side being dressed, with the feathers on, are made into muffs and tippets.

THE LITTLE GREBE, OR DABCHICK.

The Dabchick, the smallest of the species, in length only about ten inches, is again a race of birds common to the colder parts of both continents, having been seen round Hudson's Bay, though hitherto unknown even as a visitor within the limits of the United States. This is the least and most plentiful species, being common in Europe and the north of Asia in most lakes, slow running rivers, streams, and ponds, which are well supplied with the shelter of reeds. It seldom takes to wing, but dives on the least alarm, and will remain under water amongst the floating weeds and sheltering herbage, with its bill alone elevated above for respiration. Its nest, like that of other Grebes, is formed of a large quantity of coarse aquatic plants, piled together to the thickness of a foot, and is generally fastened to the reeds or flags, in order to prevent its removal by the current. The eggs, five or six in number, are of a dirty white, and somewhat less than those of a Pigeon. These are generally covered with weeds for concealment in the absence of the birds; yet with every precaution they are frequently destroyed by the Water Rat.



LITTLE GREBE.

In large rivers these little divers are often devoured by Pike and Trout, while they are themselves engaged in the pursuit of small fish. In the spring the males are very active in pursuit of their intended mates, and at such times frequently fly along the surface of the water to a small distance, uttering often a shrill chattering noise.

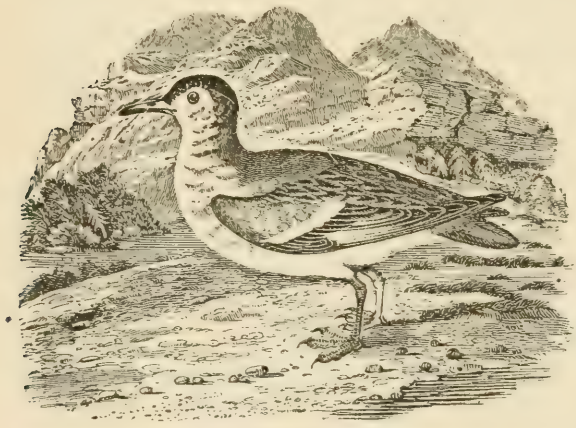


LITTLE GREBE AND THEIR NESTS.

After the breeding season, they frequent the inlets of the sea, and feed on shrimps and other marine productions. This species is not uncommon in most parts of the old continent.

THE RED PHALAROPE.

The Flat-billed, or Red Phalarope, inhabits the whole Arctic circle during summer, where, in the security of solitude, it passes the important period of reproduction. It is observed in the north and east of Europe; in abundance in Siberia, upon the banks of lakes and rivers, and it extends its vernal migrations to the borders of the Caspian They abound in the hyperboreal regions of America, breeding on the North Georgian Islands, and the remote and wintry coasts of Mellville Peninsula. The late enterprising and scientific northern navigators, on the 10th of June, in the latitude of 68°, saw a company of these little daring voyagers out at sea, four miles from land, swimming at their ease, amidst mountains of ice. They are seen also by mariners between Asia and America. According to Mr. Bullock, the Red Phalarope is found common in the marshes of Sunda and Westra, the most northerly of the Orkney Isles, where they pass the breeding season, and are there so tame, and little alarmed by the destructive arts of man, as to suffer the report of a gun without fear, so that Mr. B. killed as many as nine of them without moving from the spot where he made the first discharge. When seen swimming in pools, it is continually dipping the bill into the water as if feeding on some minute insects, and while thus engaged it will often allow of a very near approach. When disturbed they fly out a short distance only, like the Dunlins. Sometimes, though rarely, they are seen to approach the shore or the land in quest of food, but their proper element is the water, and more particularly that of the sea or saline pools.



RED PHALAROPE.

The Flat-billed Phalarope breeds around Hudson's Bay in the month of June, soon after their arrival from their tropical winter quarters; for this purpose, they select some dry and grassy spot, wherein they lay about four eggs of an oil-green color, crowded with irregular spots of dark umber brown, which become confluent towards the obtuse end. The young take to wing in July, or early in August, and they leave the inclement shores of their nativity in the month of September. At this period, as well as in the spring, a few stragglers visit the United States, where they have been occasionally shot in the vicinity of Philadelphia and Boston. These and other species are also

seen, in the autumn, about Vera Cruz, where they are sold with other game in the market. Their visits in England and Germany are equally rare as in the United States, and they have been known sometimes to stray into Switzerland, having been shot on the lake of Geneva.

SWIMMERS.

In the *Anseres*, or Swimmers, the bill is smooth, obtuse at the point, and covered with a membranaceous skin. The legs are short and compressed; and the feet formed for swimming, the toes being connected by a membrane.

OF THE DUCK TRIBE IN GENERAL.

The bill in this tribe (which comprehends Swans and Geese, as well as Ducks) is strong, broad, flat, and generally furnished at the end with a kind of nail: the edges of the mandibles are marked with sharp serratures. The nostrils are small and oval. The tongue is broad, having the edges fringed near the base. The toes are four in number, three before and one behind; the middle one is the longest.

THE HOOPER OR WHISTLING SWAN

The Whistling Swan is somewhat smaller than the tame species. The bill is three inches long; yellowish white to the middle, but black at the end. The whole plumage is white; and the legs are black.



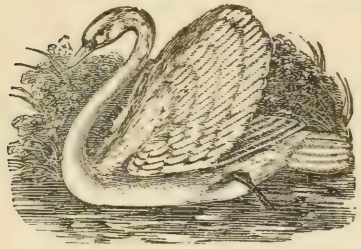
HOOPER, OR WHISTLING SWAN.

This species is an inhabitant of the northern regions; never appearing in England, except in hard winters, when flocks of five or six are now and then seen.

In Iceland these birds are an object of chase. In the month of August they lose their feathers to such a degree, as not to be able to fly. The natives, at that season, resort in great numbers to the places where they most abound; and are accompanied with dogs, and active and strong horses, trained to the sport, and capable of

passing nimbly over the boggy soil and marches. The Swans are able to run as fast as a tolerably fleet horse. The greater number are caught by the dogs, which are taught to seize them by the neck a mode of attack that causes them to lose their balance, and become an easy prey.

Notwithstanding their size, these birds are so extremely swift on the wing, when in full feather, as to make them more difficult to be shot than almost any others; it being frequently necessary to aim ten or twelve feet before their bills. This, however, is only when they are flying before the wind in a brisk gale; at which time they seldom proceed at the rate of less than a hundred miles an hour: but when flying across the wind or against it, they are not able to make any great progress.



SWAN.

The present species has several marks of distinction from that called by us the Tame Swan: but the most remarkable one is the strange form of the windpipe; which falls into the chest, then turns back like a trumpet, and afterwards makes a second bend to join the lungs. By this curious construction the bird is enabled to utter a loud and shrill note. The tame Swan on the contrary, is the most silent of all the feathered tribes; it can do nothing more than hiss, which it does on receiving any provocation. The vocal Swan emits its loud notes only when flying, or calling: the sound is *whoogh*, *whoogh*, very loud and shrill, but not disagreeable when heard high in the air and modulated by the winds. The Icelanders compare it to the notes of the violin; they hear it at the end of their long and gloomy winter, when the return of the Swans announces also the return of summer; every note, therefore, must to them be melodious, which presages a speedy thaw, and a release from their tedious confinement.

THE TAME, OR MUTE SWAN.

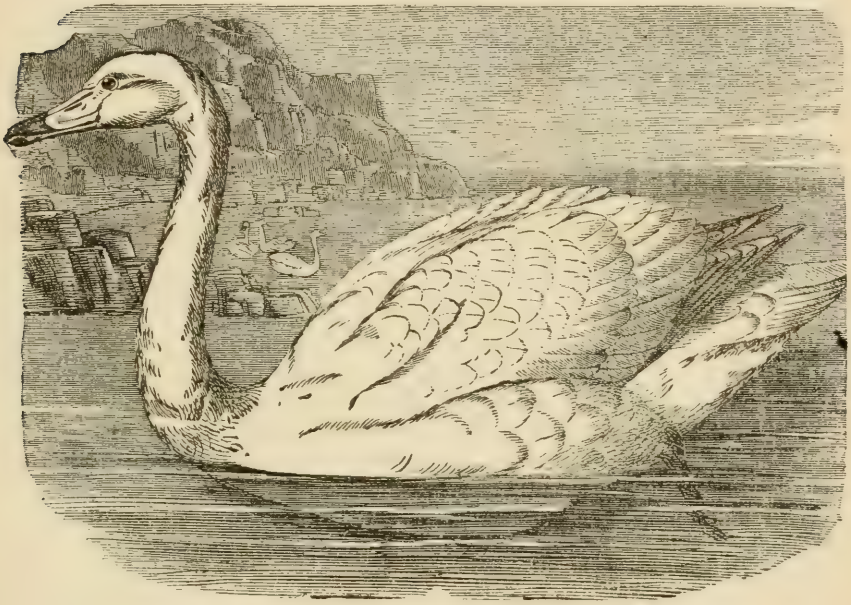
Nothing can exceed the beauty and elegance with which the Swan rows itself along in the water, throwing itself into the proudest attitudes imaginable before the spectators; and there is not perhaps in all nature a more lively or striking image of dignity and grace.

This bird is able to swim faster than a man can walk. The Swan is very strong, and at times extremely fierce: and this bird has not unfrequently been known to throw down and trample upon youths of fifteen or sixteen years of age; and an old Swan, we are told, is able to break the leg of a man with a single stroke of its wing. A female, while in the act of sitting, observed a Fox swimming towards her from the opposite shore: she instantly darted into the water, and having kept it at bay for a considerable time with her wings, at last succeeded in drowning him; after which, in the sight of several persons, she

returned to her nest in triumph. This circumstance took place at Pensy in Buckinghamshire.

Swans are very long-lived, sometimes attaining the great age of a hundred years. The flesh of the old birds is hard and ill-tasted; but that of the young-ones, or cygnets, was formerly much esteemed.

The Swan makes its nest of grass, among reeds; and in February



SWAN.

begins to lay, depositing an egg every other day till there are six or eight. These occupy six weeks in hatching. Dr. Latham says, he knew two females that for three or four years successively agreed to associate, and had each a brood yearly, bringing up together about eleven young-ones: they sat by turns, and never quarrelled. These birds are found wild in Russia and Siberia.

THE BLACK SWAN.

"Like a Black Swan," was formerly a well known proverb, analogous to the Horse Marines of the present day; unfortunately for the proverb a Swan has been discovered in Australia, the whole of whose plumage is a jetty black, with the exception of the quill feathers, which are white. It has been domesticated in England, and may be seen in St. James' Park, eagerly seeking after the crumbs offered by juvenile hands. It is rather smaller than the Whistling Swan.

THE SNOW GOOSE.

This bird is about the size of the common Goose. The upper man-

dible of the bill is scarlet, and the lower one whitish. The general color of the plumage is white; except the first ten quills of the wings, which are black with white shafts. The young birds are of a blue color, till they are a year old. The legs are red.

Snow Geese are very numerous about Hudson's Bay; where they are migratory, going further northward to breed. They are also found in several of the northern parts of the Old Continent.

These birds have so little of the shyness of other Geese, that, about Jakut, and the other parts of Siberia which they frequent, they are caught in the most ridiculous manner imaginable. The inhabitants place near the banks of the rivers a great net in a straight line; or else form a hovel of skins sewed together. This done, one of the company dresses himself in the skin of a white rein-deer, advances towards the flock of Geese, and then turns back towards the net or hovel; and his companions go behind the flock, and, by making a noise, drive them forward. The simple birds mistake the man in white for their leader, and follow him within reach of the net; which is suddenly pulled down, and thus captures the whole. When he chooses to conduct them even into the hovel, they follow in a similar manner; he creeps in at a hole left for that purpose, and out at another on the opposite side, which he closes up. The Geese follow him through the first; and as soon as they are in, he passes around and secures every one of them. In that frozen climate the Snow Geese afford an essential means of subsistence to the natives; and their feathers are an article of commerce. Each family kill thousands in a season; and, after plucking and gutting them, they fling them in heaps, into holes dug for that purpose, and covered only with earth. The mould freezes and forms over them an arch; and whenever the family have occasion to open one of these magazines, they find their provisions perfectly sweet and good.



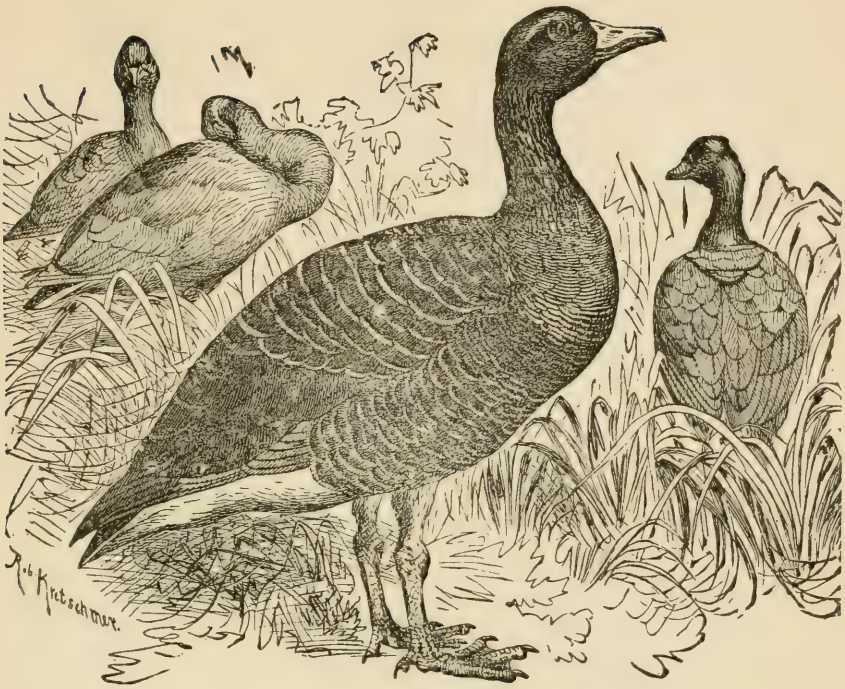
SNOW GOOSE

THE WILD GOOSE.

These birds are often seen in flocks of from fifty to a hundred, flying at very great heights, and seldom resting by day. Their cry is frequently heard while, from their distance above, they are imperceptible to the sight. Whether this be their note of mutual encouragement, or only the necessary consequence of respiration, seems doubtful; but they seldom exert it when they alight in their journeys. On the ground they always arrange themselves in a line, and seem to descend rather for rest than refreshment, for having continued



WILD GOOSE.



WILD GEESE.

there an hour or two, one of them with a long loud note, sounds a kind of signal, to which the rest always punctually attend, and, rising in a group, they pursue their journey with alacrity. Their flight is conducted with vast regularity. They always proceed either in a line abreast, or in two lines joining in an angle at the middle. In this order they often take the lead by turns, the foremost falling back in the rear when tired, and the next in station taking his place. Their track is generally so high, that it is almost impossible to reach them from a fowling-piece; and even when this can be done, they file so equally, that one discharge seldom kills more than a single bird.



WILD GOOSE



TAME GOOSE.

They breed in the plains and marshes about Hudson's Bay in North America: in some years the young ones are caught in considerable numbers; and at this age they are easily tamed. It is, however, singular, that they will never learn to eat corn, unless some of the old ones be caught along with them.

These birds are kept in vast quantites in the fens of Lincolnshire several persons there having as many as a thousand breeders. They are bred for the sake of their quills and feathers; for which they are stripped while alive, once in the year for the quills, and five times for the feathers.



TAME CHINA GOOSE.

However simple in appearance, or awkward in gesture, the Goose may be, it is not without many marks both of sentiment and understanding. The courage with which it protects its offspring and defends itself against ravenous birds, and certain instances of attachment and even of gratitude, which have been observed in it, render our general contempt of the Goose ill-founded.

THE BERNACLE GOOSE.

The usual weight of this bird is about five pounds. The bill is short and black, crossed with a flesh-colored mark on each side. Part of the head, the chin, throat, and under parts of the body, and the upper tail-coverts are white; and the rest of the head and neck, and the beginning of the back, are black. The thighs are mottled. Round the knee the feathers are black; and the lower feathers of the back are the same, edged with white. The wing-coverts and scapulars are blue gray.

Of all the marvellous productions which ignorance, ever credulous, has substituted for the simple and truly wonderful operations of nature, perhaps the most absurd is the assertion that this species of Goose grows in a kind of shell, called *Lepas anatifera*, (Goose-bearing shell) on certain trees on the coast of Scotland and the Orkneys, or on the rotten timbers of old ships.



BERNACLE GOOSE.

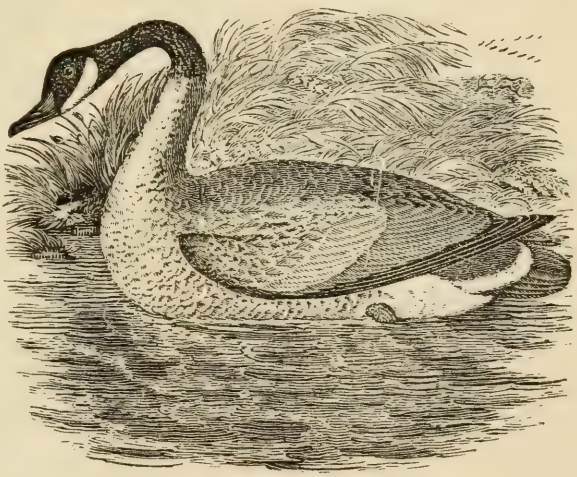
In winter Bernacle Geese are not uncommon on many of the northern and western coasts of Great Britain; but they are scarce in the south, and are there seldom seen except in inclement seasons.

THE CANADA GOOSE.

This is a bird somewhat bigger than the tame Goose. The bill, the head, and the neck, are black; and under the throat there is a broad white band, like a crescent. The breast, the upper part of the belly, the back, and wing-coverts, are dusky brown; the lower parts of the neck and belly, and upper tail-coverts, white. The quills and tail are black, and the legs dark lead-color.

Canada Geese inhabit the more distant parts of North America. Immense flocks of these birds appear annually in the spring in Hudson's Bay: they pass further north to breed; and return southward in the autumn. The English at Hudson's Bay depend greatly on Geese, of this and other kinds, for their support; and in favorable years they often kill three or four thousand, which they salt and barrel. The arrival of the birds is impatiently waited, because they are considered the harbingers of the spring, and the month in which they return is named by the Indians the *Goose* Moon.

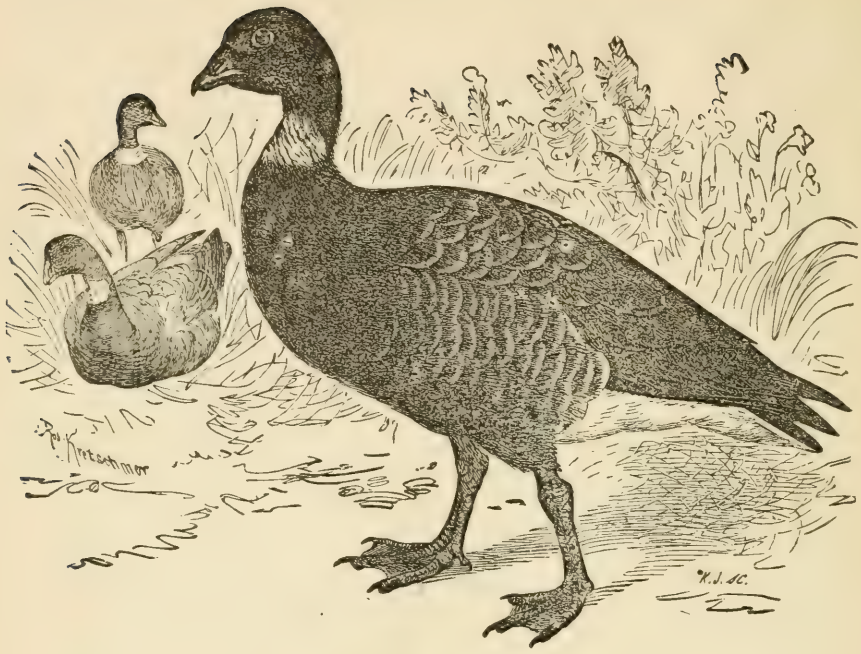
The English settlers send out their servants, as well as the Indians, to shoot these birds on their passage. The men for this purpose form of boughs a row of huts, at gun-shot distance from each other, and in a line across the vast marshes of the country. The sportsman remains notionless, and on his knees, with his gun cocked the whole time; and does not fire till he can perceive the eyes of the Geese. The Geese that he has killed, he sets up on sticks, as if alive, to decoy others; he also makes artificial birds for the same purpose.



CANADA GOOSE.

THE BRANT, OR BRENT GOOSE.

The Brent is another of the hardy aquatic birds common to the hyperboreal regions of both continents. They breed in great numbers on the coasts and islands of Hudson's Bay and the Arctic Sea, and are rarely seen in the interior. In Europe they proceed to the most northern isles of Greenland, and to the dreary shores of Spitzbergen. In winter they are very abundant in Holland and in Ireland, as



BRENT GOOSE.

well as in Scotland, where they remain until spring. In America, though they visit in the course of their migrations, most of the Northern and Middle States, they proceed still farther south, to spend the winter, being seen on the Mississippi nearly to New Orleans. They retire from their natal regions in the north in September; and early in October are seen to arrive in great numbers about Ipswich, Cape Ann, and Cape Cod in Massachusetts, continuing to come till the month of November, and generally appearing in great numbers after the occurrence of an eastwardly storm. In hazy weather they also fly low and diverge into the bays and inlets. Many of these wandering flocks pass on to the south almost without any delay, usually in marshalled and angular lines, but sometimes in a confused gang, loudly gabbling as they proceed. Their stay here is commonly so short that it is necessary to ambuscade in huts on their route in order to obtain them.

THE EIDER DUCK.

This species is about twice the size of the common Duck. Its bill is black, and the feathers of the forehead and cheeks advance far into the base. In the male, the feathers of part of the head, of the lower part of the breast, the belly, and the tail, are black, as are also the quill-feathers of the wings; and nearly all the rest of the body is white. The legs are green. The female is of a reddish brown color, variously marked with black and dusky streaks. The Eider Duck is principally

found in the western isles of Scotland, and on the coasts of Norway, Iceland, and Greenland.

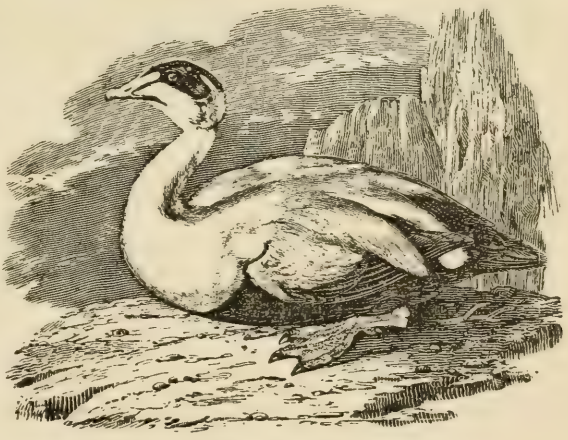
In Iceland, the Eider Ducks generally form their nests on small islands not far from the shore; and sometimes even near the dwellings of the natives, who treat them with so much attention and kindness as to render them nearly tame. Sometimes two females will lay their eggs in the same nest, in which case they always agree remarkably well.



EIDER DUCK.

As long as the female is sitting, the male continues on watch near the shore: but as soon as the young-ones are hatched he leaves them. The mother, however, remains with them a considerable time afterwards. It is curious to observe her manner of leading them out of the nest, almost as soon as they creep from the eggs. Going before them to the shore, they trip after: and, when she comes to the water-side, she takes them on her back, and swims a few yards with them; when she dives, and the young-ones are left floating on the surface, and are obliged to take care of themselves. They are seldom seen afterwards on land.

From these birds is produced the soft down so well known by the name of *eider* or *eider-down*. This the old birds pluck from their breasts in the breeding season, to line their nests: making with it a soft bed for their young-ones. When the bird-catchers come to the nest, they carefully remove the female, and take away the superfluous down and eggs; after this they replace her. She then begins to lay afresh, and covers her eggs with new down, which she plucks from her body. When she has no more left, the male comes to her assistance, and covers the eggs with his down, which is white, and easily distinguished from that of the female. When the young-ones leave the nest, which is about an hour after they are hatched, it is once more plundered.



EIDER DUCK.

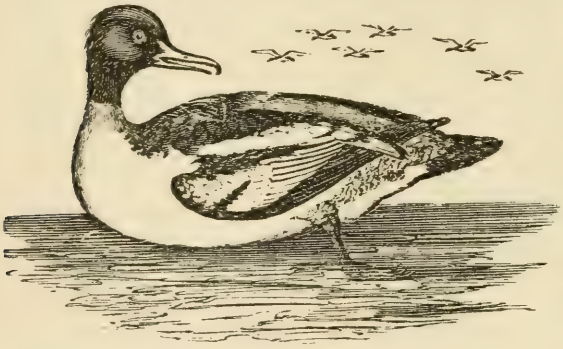
The best down and the most eggs, are obtained during the first three weeks after the nest is formed; and it has generally been observed, that the birds lay the greatest number of eggs in rainy weather. One female, during the time of laying, generally yields half a pound of down; which, however, is reduced one half after it is cleansed.

The eider-down, when pure, is of such value that it is sold in Lapland for two dollars a pound. It is extremely soft and warm, and so light and expansive, that a couple of handsful squeezed together, are sufficient to fill a down quilt;—a covering like a feather-bed, used in cold countries instead of a common quilt or blanket.

The Greenlanders kill these birds with darts; pursuing them in their little boats, watching their course by the air-bubbles when they dive, and always striking at them when they rise

THE GOOSANDER.

The Goosander inhabits the remote northern regions of both continents, being seen during summer on the borders of grassy lakes and streams through the whole of the fur countries, and are among the latest of their tribe in autumn to seek an asylum in milder climates. They are said to breed in every latitude in the Russian empire, but mostly in the north.



GOOSANDER.

They are common also in Kamtschatka and extend through northern Europe, to the wintry shores of Iceland and Greenland. Many, however, pass the breeding season in the Orkneys, and these scarcely ever find any necessity to migrate. They are seen in small families or companies of six or eight in the United States in winter, and frequent the sea shores, lakes and rivers, continually diving in quest of their food, which consists principally of fish and shelly mollusca. They are also very gluttonous and voracious, like the Albatross sometimes swallowing a fish too large to enter whole into the stomach, which therefore lodges in the œsophagus till the lower part is digested before the remainder can follow. The roughness of the tongue, covered with incurved projections, and the form of the bent serratures which edge the bill, appear all purposely contrived with reference to its piscatory habits. In the course of the season they migrate probably to the extremity of the Union, being seen in winter in the Mississippi and Missouri, from whence at the approach of spring they migrate north or in the interior to breed

THE COMMON WILD DUCK.

Wild Ducks frequent marshy places; but nowhere in such abundance as in Lincolnshire, (England,) where prodigious numbers of them

are annually taken in the decoys. In only ten decoys in the neighborhood of Wainfleet, as many as thirty-one thousand two hundred have been caught in one season.



WILD DUCK.

A decoy is a pond generally situated in a marsh, so as to be surrounded with wood or reeds, and, if possible, with both, for the purpose of preventing the birds which frequent it from being disturbed. In this pond the birds sleep during the day, and, as soon as the evening sets in, the decoy *rises*, (as it is termed,) and the wild-fowl feed during the night. If the evening be still, the noise of their wings during flight is heard at a great distance, and is a pleasing though somewhat melancholy sound. *The decoy-ducks* (which are either bred in the pond-yard, or in the marshes adjacent, and which, although they fly abroad, regularly return for food to the pond, and mix with the tame ones that never quit the pond) are fed with hemp-seed, oats, and buck-wheat. In catching the wild birds, hemp-seed is thrown over the screens to allure them forward into the *pipes;* of which there are several, leading up a narrow ditch, that closes at last with a *funnel-net* Over these *pipes*, which grow narrower from the first entrance, there is a continued arch of netting suspended on hoops. It is necessary to have a *pipe* for almost every wind that can blow, as on that circumstance it depends which *pipe* the fowl will take to. The decoy-man likewise always keeps to the leeward of the wild-fowl, and burns in his mouth or hand a piece of *Dutch turf*, that his effluvia may not reach them; for, if they once discover by the smell that a man is near, they all instantly take flight. Along each *pipe* are placed *reed screens*, at certain intervals, to prevent him from being seen till he thinks proper to show himself, or the birds have passed up the *pipe* to which they are led by the trained Ducks, (which know the man's whistle,) or enticed by the hemp-seed. A Dog is sometimes used, who is taught to play backward and forward between the screens, at the

direction of his master. The fowl roused by this new object, advance towards it, while the Dog is playing still nearer the entrance of the *pipes*; till at last the decoy-man appears from behind the screens, and the wild-fowl not daring to pass by him, and unable to fly off on account of the net covering the hoops, press forward to the end of the funnel-net, which terminates upon the land, where a person is stationed ready to take them. The trained birds return back past the decoy-men, into the pond, till a repetition of their services is required.

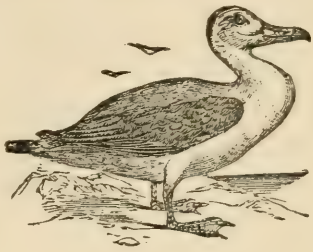
Wild Ducks are very artful birds. They do not always build their nests close to the water, but often at a considerable distance from it; in which case the female will take the young-ones in her beak, or between her legs, to the water. They have sometimes been known to lay their eggs in a high tree, in a deserted Magpie or Crow's nest; and an instance has been recorded of one being found at Etchingham, in Sussex, sitting upon nine eggs, in an oak, at the height of twenty-five feet from the ground: the eggs were supported by some small twigs laid crossways.

Prodigious numbers of these birds are taken by decoys, near Picardy in France, particularly on the river Somme. It is customary there, to wait for the flock's passing over certain known places: when the sportsman having ready a wicker cage containing a number of tame birds, lets out one at a time, which enticing the passengers within gun-shot, five or six are often killed at once by an expert marksman. They are now and then also caught by means of hooks baited with raw meat, which the birds swallow while swimming on the water.

Other methods of catching Ducks and Geese are peculiar to certain nations: one of these, from its singularity, seems worth mentioning. A person wades into the water up to the chin; and, having his head covered with an empty *calabash*, approaches the place where the Ducks are. These, not regarding an object of this kind, suffer the man freely to mix with the flock; and he has only to pull them by the legs under the water, one after another, and fix them to his belt, till he is satisfied. This curious method is frequently practised on the river Ganges, the earthen vessels of the Gentoos being there used instead of calabashes. These vessels are what the Gentoos boil their rice in: after having been once used, they are considered as defiled, and are thrown into the river as useless. The duck-takers find them convenient for their purpose; as the Ducks, from seeing them constantly float down the stream, consider them as objects not to be regarded.

The Chinese make great use of Ducks, but prefer as food the tame to the wild ones. It is said that the major part of the Ducks in China are hatched by artificial heat. The eggs, being laid in boxes of sand, are placed on a brick hearth, to which is given a proper heat during the time required for hatching. The Ducklings are fed with craw-fish and crabs, boiled and cut small, and afterwards mixed with boiled rice: and in about a fortnight they are able to shift for themselves. The Chinese then provide them an old *stepmother* who leads them where to find provender; being first put on board a *sampane*, or boat, which is destined for their habitation; and from which the whole

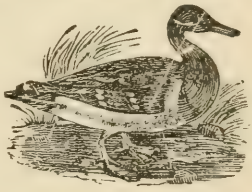
flock, often to the amount of three or four hundred, go out to feed, and return at command. This method is used nine months out of twelve, (for in the colder months it does not succeed,) and it is so far from a novelty, that it may every where be seen, but more especially about the time of cutting the rice, and gleaning the crop, when the masters of the Duck sampanes row up and down the river, according to the opportunity of procuring food, which is found in plenty, at the tide of ebb, on the rice plantations, as they are overflowed at high water. It is curious to observe how the Ducks obey their masters; for some thousands, belonging to different boats will feed on the same spot, and, on a signal given, will follow their leader to their respective sampanes, without a single stranger being found among them. This is still more extraordinary, if we consider the number of inhabited sampanes* on the Tigris: there are supposed to be no fewer than *forty thousand;* they are moored in rows close to each other, with here and there a narrow passage for boats to sail up and down the river.



CHINESE DUCK.

THE GARGANEY.

This bird is somewhat larger than the Teal. The bill is black. The crown and hind part of the head are of a dusky brown. On the chin there is a large black spot; and, from the eye, a white streak passes to the back of the head. The cheeks and neck are of a pale purple and white. The breast is light brown, crossed with semicircular bars of black: and the belly is white, having its lower parts varied with dusky specks. The legs are lead-colored.



GARGANEY

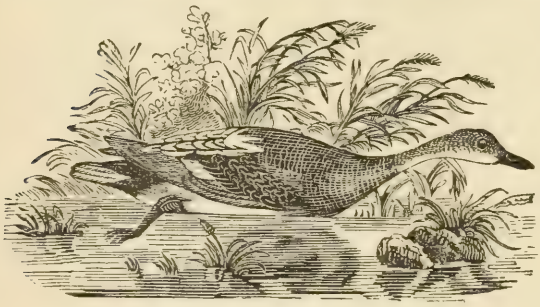
A couple of these birds were for more than two months in the possession of M. Frisch, who has given the following detail of their mode of living in this sort of incipient domestication. "I presented to them (he says) different seeds, and they would touch none: but scarcely had I set beside their water-trough, a basin filled with millet, than they both ran to it. At every bill-full which they took each went to the water, and they carried as much water as, in a short time, completely to soak the millet; yet the grain was not moistened sufficiently to their mind, and I saw them busied in carrying millet and water to the ground of their pen, which was of clay, and when the bottom was softened and tempered enough, they began to dabble, and

* Sampane is a common name for a boat: the inhabited sampanes contain each a separate family, of which they are the only dwelling; and many of the Chinese pass almost their whole lives in this manner on the water

made a cavity, in which they ate their millet, mixed with earth. I put them into a room, and they carried in the same way, though to little purpose, the millet and water to the deal floor. I led them on the grass, and they seemed to do nothing but dig for seeds, without eating the blades, or even the earth-worms. They pursued flies, and snapped at them like Ducks. When I delayed to give them their accustomed food, they called for it with a feeble hoarse cry, *quoak*, repeated every minute. In the evening they lay in the corners; and even during the day, when any person went near them, they hid themselves in the narrowest holes. They lived thus till the approach of winter, but when the severe cold set in, they both died suddenly."

THE GADWALL, OR GREY.

The Gadwall inhabits the northern regions of both continents, but does not in America, according to Richardson, proceed farther than the 68th parallel, and in Europe it seems not to advance higher than Sweden. In the Russian empire it extends over most of the latitudes of the European and Siberian part, except the east of the latter and Kamtschatka. In their migrations they pass chiefly into the warmer parts of Europe, being very rare in England, but common on the coasts of France, Italy, and Sardinia. In the United States it appears to be generally rare. A few of the young birds are seen in this vicinity; and Wilson met with it in the interior on Seneca Lake, in October, and in February, at Louisville on the Ohio; and near the Big Bone Lick, in Kentucky.



GADWALL.

The Gadwall breeds in the woody districts of the remote northern fur countries of Canada. In the north of Europe they inhabit the vast rushy marshes; and in Holland, where they are common, they associate in the same places with the Wild Duck or Mallard. They nest in meadows and among rushes, laying eight or nine greenish gray eggs. They are very much esteemed as game, are very alert at diving and swimming, and plunging at the flash of the gun are obtained with difficulty. It is very timorous, lurking in the marshes by day, feeding only in the twilight of the morning and evening, and often till some time after night-fall; they are then heard flying in company with the Whistlers, and like these obey the call of the decoy Ducks. Their cry much resembles that of the common Wild Duck; nor is it more raucous or louder, though Gesner seems to have meant to characterize its note by applying the epithet *strepera*, which has been

adopted by succeeding ornithologists. Their food, consists of small fish, shelly mollusca, insects and aquatic plants.

THE AMERICAN WIDGEON.

This species, so nearly allied to the European Widgeon, has not been found in the old continent, yet it retires north to breed, inhabiting in summer the woody districts of the remote fur countries, near Hudson's Bay, as far as the 68th degree of latitude. In autumn and winter they are seen common in nearly all parts of the Union, many wintering in North and South Carolina in the open rivers and bays, sometimes considerably inland. Indeed I have never seen them any where so numerous as in the Neuse river, round Newbern, forty miles from the ocean, where in company with the Canvas-Back and Buffel-Head, they are seen constantly in February and March. They are also numerous in Chesapeake Bay; and in the course of the winter extend their migrations as far as St. Domingo and other of the West India islands, as well as into Cayenne in the tropical parts of the continent. They are also observed in the interior of the United States, as on the Missouri, and probably other inland parts, where in the month of April, as well as on the sea coast, they are seen on their way to their northern breeding places to which they repair in May, on the thawing of the ice, and are then commonly associated by pairs. According to Hutchins their eggs are from six to eight; and they frequent the swamps, and feed much on insects.

The Widgeon, or Bald-Pate, is a frequent attendant on the Canvas-Back, and often profits by this association. The former, not being commonly in the habit of diving for subsistence, or merely from caprice, watches the motions of its industrious neighbor, and as soon as the Canvas-Back rises with the favorite root on which they both greedily feed, the Bald-Pate snatches the morsel and makes off with his booty. They are always very alert and lively, feeding and swimming out into the ponds and rivers at all hours of the day, but are extremely watchful, sheltering in coves and behind the land, and on the slightest attempt to steal upon them, immediately row out into the stream beyond gun-shot, and then only take to wing when much disturbed.

THE SUMMER, OR WOOD DUCK.



SUMMER DUCK.

This most beautiful of Ducks seems to be dressed in a studied attire, to which the addition of a flowing crest adds a finish of peculiar elegance; and hence Linnæus has dignified the species with the title of *sponsa* or the bride This splendid bird, according to Nuttall, is peculiar to America but extends its residence from the cold regions of Hudson's Bay in the 54th parallel to Mexico and the Antilles. Throughout a great part of this vast space, or at

least as far south as Florida and the Mississippi territory, the Summer Duck is known to breed. In the interior they are also found in the State of Missouri, and along the woody borders and still streams which flow into most of the great north-western lakes of the St. Lawrence. The Summer Duck, so called from its constant residence in the United States, has indeed but little predilection for the sea coast, its favorite haunts being the solitary, deep, and still waters, ponds, woody lakes, and the mill dams in the interior, making its nest often in decayed and hollow trees impending over the water.



SUMMER DUCK.

Though many migrate probably to the shores of the Mexican Gulf, numbers pass the winter in the States south of Virginia. Early in February they are seen associated by pairs on the inundated banks of the Alabama, and are frequent at the same season in the waters of West Florida. In Pennsylvania they usually nest late in April or early in May, choosing the hollow of some broken or decayed tree.

and sometimes even constructing a rude nest of sticks in the forks of branches. The eggs twelve or thirteen are yellowish-white, rather less than those of the domestic Hen, and they are usually covered with down, probably plucked from the breast of the parent. The same tree is sometimes occupied, by the same pair, for several successive years, in the breeding season. The young, when hatched, are carried down in the bill of the female, and afterwards conducted by her to the nearest water. To these places, when once selected, if not disturbed, they sometimes show a strong predilection, and are not easily induced to forsake the premises, however invaded by noise and bustle. While the female is sitting, the male is usually perched on some adjoining limb of the same tree, keeping watch for their common safety. The species is scarcely ever gregarious, they are only seen in pairs or by families.

The Wood Duck has sometimes been tamed, and soon becomes familiar. They have even been so far domesticated as to run about at large in the barn yard like ordinary fowls. In France they have also been acclimated and tamed, and have bred in this condition.

THE AMERICAN TEAL.

The Green-Winged Teal, as a species, is common to the northern and temperate parts of both continents. The American bird appears to be a permanent and distinct variety. There is, according to Dr. Richardson, however, in the Hudson's Bay Museum, a specimen from the fur countries agreeing in all respects with the European species. Our variety is abundant to the extremity of the continent, both in the woody and barren districts of the remote fur countries of Hudson's Bay. It is also plentiful about Severn river, in the woods and plains near fresh waters, where it breeds, the young being about six or seven at a hatch. It feeds much upon fresh-water insects, seeds, and aquatic plants, and when fat is delicate food. In the autumn and winter it is very common throughout the waters of the United States, both in the interior and contiguous to the sea coast. In the course of the winter they retire as far south as Jamaica and are probably common also along the



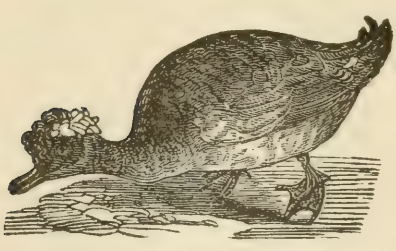
AMERICAN TEAL.

coasts of the Mexican Gulf. It frequents ponds, marshes, the reedy shores of creeks and rivers, and in winter is very abundant in the rice plantations of the South. They usually fly in small parties, feeding mostly by night; associating with the Mallard, and are commonly decoyed by its call.

The Teal is found in the north of Europe as far as Greenland and Iceland, and it also inhabits the borders of the Caspian to the south. In France and England it is said to breed. They are commonly seen on the pools, in close companies of ten or twelve together, frequenting the rivers and unfrozen springs in winter, where they subsist on aquatic plants. They fly very swiftly, and utter a sort of whistling cry. The Teal breeds in the fens, continuing in the temperate parts of Europe the whole year. It conceals its nest among the bulrushes, constructing it of their stalks, and lining it with feathers; it rests also sometimes on the surface of the water, so as to rise and fall with the flood. The eggs are about ten or twelve, of a soiled white, indistinctly marked with brown spots. The female takes the whole management of the incubation; the males, at this time, seem to leave them and associate for themselves in companies.

THE MUSK, OR MUSCOVY DUCK.

The Musk Duck derives its name from its exhaling at times a strong odor of that drug. The term Muscovy is wholly misapplied, since it is an exclusive native of the warmer and tropical parts of America and its islands. They exist wild in Brazil, Demerara, and the overflowed savannas of Guianna, and are occasionally seen along the coasts of the Mexican Gulf, in the lower part of Mississippi, and stragglers are frequently observed along the coasts of the warmer parts of the Union.



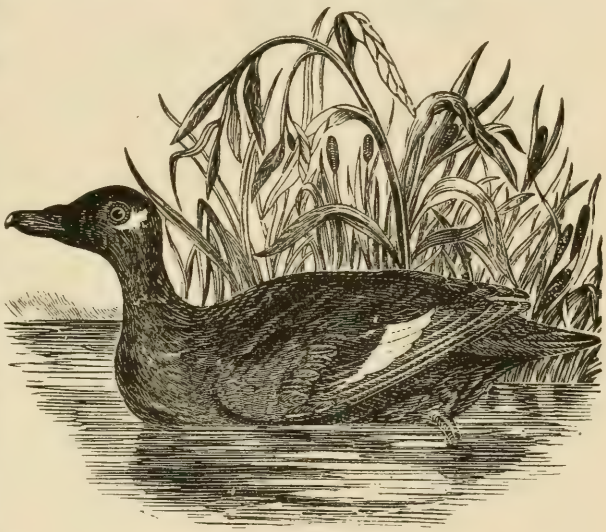
MUSCOVY DUCK.

They feed in the tropical savannas chiefly upon the seeds of some grasses which resemble, and are called, wild rice; flying in the morning to those immense and overflowed meadows to feed, and returning in the evening to their roosts near the sea. They are said to pass the warmer parts of the day indolently perched upon trees, which overhang the rivers and marshes, in the hollows of which, like our Wood Ducks, they construct their nest, and convey the young to the water as soon as they are hatched. They breed at all times of the year, and are very prolific, but many of the young fall victims to the Caymans and other predatory animals with which those countries are infested. The eggs are nearly quite round and of a greenish-white color. The male is very ardent and readily couples with the domestic Duck. In a wild state they are very shy and watchful and approached with difficulty.

The Musk Duck is now commonly domesticated, feeds and fattens well, is deservedly esteemed as food, more particularly the young, and though derived from the mildest of climates, endures the winter of the Eastern and Northern States without any difficulty or hardship.

THE VELVET DUCK.

The Velvet Duck is common to the northern regions of both continents, where it retires late in the spring to pass the period of reproduction. Like the preceding, they live principally upon the sea and its productions, diving often in broken water for shell-fish and other marine bodies. They breed along the Arctic coasts and around Hudson's Bay and Labrador, retiring inland for the purpose; nesting contiguous to small fresh-water pools in the shelter of Juniper or Pine bushes, laying from eight to ten white eggs, which the female closely covers with her elastic feather. The young are attended by the female only, who remains with her brood in these seclusions until they are nearly ready to fly. She also makes a show of defending them, and the young themselves often, by their great alertness in diving, escape the attacks of their enemies. They are abundant in the Orkneys and Hebrides, as well as in Norway, Sweden, Lapland; and are common in some parts of Siberia and Kamtschatka. Near Kingis, on the banks of the Tornea in Lapland, a little beyond the 67th parallel, Skiöldebrand remarked them nesting in trees, particularly Pines, accompanied by the Golden Eye (*Fuligula cangula.*) The inhabitants, he also adds, knowing the trouble they have in forming their nests, attach hollowed pieces of wood to the trees for their convenience; and in recompense receive a quantity of their eggs, which supply the place of those of the common fowl.

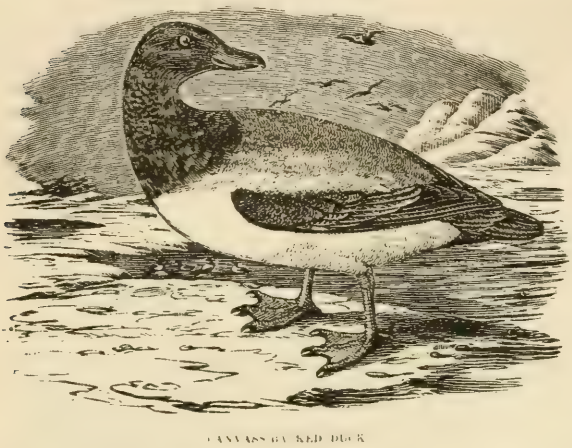


VELVET DUCK.

CANVASS-BACKED DUCK.

The Canvass-Back, so well known as a delicacy of the table, is a species peculiar to the continent of America. It breeds, according to Richardson, in all parts of the remote fur countries from the 50th

parallel to their most northern limits, and at this period associates much on the water with the ordinary tribe of Ducks. After the close of the period of reproduction, accumulating in flocks, and driven to the open waters of the south for their favorite means of subsistence, they arrive about the middle of October seawards on the coast of the United States. A few at this time visit the Hudson and the Delaware, but the great body of emigrants take up their quarters in the Bay of Chesapeake, and in the numerous estuaries and principal rivers which empty into it; particularly the Susquehanna, the Patapsco, Potomac and James' rivers. They also frequent the sounds and bays of North Carolina, and are abundant in the river Neuse, in the vicinity of Newbern, and probably in most of the other southern waters to the coast of the Gulf of Mexico, being seen in winter in the mild climate of New Orleans. In these different sections of the Union they are known by the various names of Canvass-Backs, White Backs, and Sheldrakes. In the depth of winter, a few pairs, probably driven from the interior by cold, arrive in Massachusetts Bay, in the vicinity of Cohasset and near Martha's Vineyard: these, as in the waters of New York, are commonly associated with the Red-Head, or Pochard, to which they have so near an affinity. Their principal food, instead of the fresh-water plant *Valisneria*, which is confined to so small a space, is, in fact, the different kinds of Sea-Wrack, known here by the name of Eelgrass, from its prodigious length, (*Zostera marina*, and *Ruppia maritima*.) These vegetables are found in nearly every part of the Atlantic, growing like submerged fields over all the muddy flats, shallow bays, estuaries, and inlets, subject to the access of salt or brackish waters. They are the marine pastures in which most of the Sea Ducks, no less than the present, find at all times, except in severe frosts, an ample supply of food.



CANVASS-BACKED DUCK.

The Canvass-Backs on their first arrival are generally lean, but by the beginning of November, they become in good order for the table. They are excellent divers, and swim with speed and agility. They sometimes assemble by thousands in a flock, and rising suddenly on wing produce a noise like thunder. During the day, they are commonly dispersed about in quest of food, but towards evening collect together, and coming into the creeks and river inlets, ride as it

were at anchor, with their heads under their wings asleep; sentinels, however, appear awake and ready to raise an alarm on the least appearance of danger. At other times they are seen swimming about the shoals, and diving after the sea-wrack, which they commonly pluck up, and select only the tenderest portion towards the root. Though thus laboriously engaged, they are still extremely shy, and can rarely be approached but by stratagem, for even while feeding, several remain unemployed and vigilant against any surprise. When wounded in the wing they dive to prodigious distances, and with such rapidity, and perseverance as almost to render the pursuit hopeless. The great demand and high estimation in which these Ducks are held, spurs the ingenuity of the gunner to practise every expedient which may promise success in their capture. They are sometimes decoyed to shore or within gun-shot by means of a dog trained for the purpose, which, playing backwards and forwards along the shore, attracts the vacant curiosity of the birds, and as they approach within a suitable distance the concealed fowler rakes them first on the water, and afterwards as they rise. Sometimes by moonlight the sportsman directs his skiff towards a flock, whose position he had previously ascertained, and keeping within the projecting shadow of some wood, bank, or headland, he paddles silently along to within fifteen or twenty yards of a flock of many thousands, among whom he consequently makes great destruction.

As the severity of the winter augments, and the rivers become extensively frozen, the Canvass-Backs retreat towards the ocean, and are then seen in the shallow bays which still remain open; occasionally also frequenting the air-holes in the ice, and openings which are sometimes made for the purpose, immediately over the beds of sea grass, to entice them within gun-shot of the hut or bush fixed at a convenient distance for commanding the hungry flocks. So urgent sometimes are the Ducks for food in winter, that at one of these artificial openings in the ice, in James' river, a Mr. Hill, according to Wilson, accompanied by a second person, picked up from one of these decoys, at three rounds each, no less than eighty-eight Canvass-Backs. The Ducks crowded to the place, so that the whole open space was not only covered with them, but vast numbers, waiting their turn, stood inactive on the ice around it.

THE HARLEQUIN DUCK

This singularly marked and beautiful species is almost a constant resident of the hyperboreal regions of the northern hemisphere, from which it migrates but short distances towards more temperate latitudes, and is as in Europe a rare and almost accidental visiter as far as the Middle States of the Union. It is however more frequent in Eastern Europe up to Greenland; and common from lake Baikal to Kamschatka. Now and then it is killed in Scotland and the Orkneys. Dr. Richardson found it to be a rare bird in the fur countries, haunting eddies under cascades, and rapid streams, where it dwells and

breeds apart from all other Ducks. In Kamschatka it affects the same retired and remarkable romantic situations; like the alpine Cinclus, it seeks out the most rocky and agitated torrents; in such situations it has been seen in the rivulets of Hudson's Bay, as much as ninety miles inland from the sea; here it seeks out its appropriate fare of spawn, shell-fish, and the larvæ of aquatic or fluviatile insects. On the low bushy and shady banks of these streams it constructs its nest, which contains from twelve to fourteen pure white eggs. On the margins of fresh-water ponds in Labrador Mr. Audubon also observed this species, and he remarks, that instead of rearing their young in the same situations chosen for breeding, as with the Velvet and Surf Duck, it conducts its brood to the sea as soon as they are hatched. Its flight is high and swift; and it swims and dives with the utmost dexterity. So great is its confidence in the security of its most natural element, that on the report of a gun over the water, it instantly quits its flight and dives at once with the celerity of thought. It is said to be clamorous, and that its voice is a sort of whistle; the anatomy of the trachea is however, unknown, and it is not said whether this sibilation be really produced from the throat or the wings, as is the latter case in the Common Clangula or Golden Eye. Driven from their solitary resorts in the interior by the invasion of frost, they are now seen out at sea engaged in obtaining a different mode of subsistence. Amidst these icy barriers they still continue to endure the rigors of winter, continually receding further out to sea, or making limited and almost accidental visits to milder regions. When discovered, they display the utmost vigilance, and instantly take to wing. It is considered to be a game superior in flavor to the Common Wild Duck. From the singular and beautiful crescent-shaped lines and marks which ornament its neck and breast it has probably come by the dignified appellation of *lord*, among the fishers of Newfoundland. It is here too rare to have acquired any particular name.

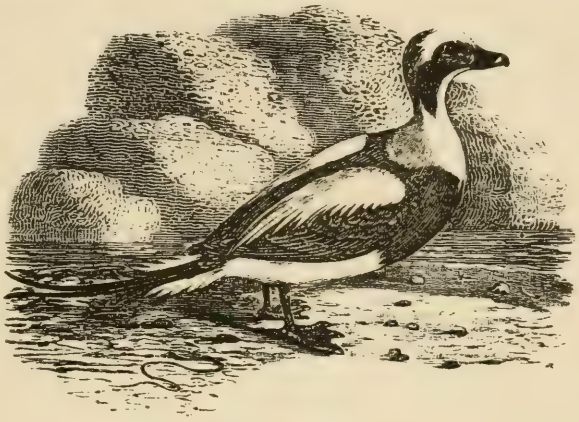


HARLEQUIN DUCK.

THE LONG-TAILED DUCK.

This elegant and noisy Duck, known so generally in the Southern States by the nickname of "South-Southerly," from its note, and, in most other parts by the appellation of "Old Squaws" or "Old Wives," is an Arctic inhabitant of both continents, and abounds in the glacia

seas of America, where it is seen commonly associated with the Eider Surf, Black and other Ducks of congenial habits, who invariably prefer the frail but, to them, productive dominion of the sea to the land or its more peaceful waters. So strong is the predilection of this species for its frigid natal climes and their icy barriers, says Nuttall, that it is seen to linger in the north as long as the existence of any open water can be ascertained; when the critical moment of departure at length approaches, common wants and general feeling begin so far to prevail as to unite the scattered families into numerous flocks. They now proceed towards the south, and making a halt on the shores and inland lakes round Hudson's Bay, remain until again reluctantly driven towards milder climes. They are the last birds of passage that take leave of the fur countries. Familiar with cold, and only driven to migrate for food, in the latter end of August when already a thin crust of ice is seen forming in the night over the still surface of the Arctic Sea, the female Harelda is observed ingeniously breaking away with her wings for the egress of her young brood.



LONG-TAILED DUCK.

According to the state of the weather we consequently observe the variable arrival of these birds. In October they generally pay us a visit, the old already clad in the more dazzling garb of winter. The young sometimes seek out the shelter of the fresh water ponds, but the old keep out at sea. No place in the Union so abounds with these gabblers as the Bay of Chesapeake. They are lively, restless and gregarious in all their movements, and fly, dive and swim with unrivalled dexterity; and subsist chiefly upon small shell-fish, and marine plants, particularly the *Zostera* or Grass-wrack. Late in the evening, or early in the morning, towards spring more particularly, vast flocks are seen in the bays and sheltered inlets, and in calm and foggy weather we hear the loud and blended nasal call, reiterated for hours from the motley multitude. There is something in the sound like the honk of the Goose, and, as far as words can express a subject so uncouth, it resembles the gutteral syllables, *'ogh ough egh*, and then *ogh ogh ogh ough egh*, given in a ludicrous drawling tone; but still with all the accompaniments of scene and season, this humble harbinger of spring, obeying the feelings of nature, and pouring forth his final ditty before his departure to the distant north, conspires with

the novelty of the call, to please rather than disgust those happy few who may be willing "to find good in everything." This peculiar cry, is well known to the aboriginal sons of the forest, and among the Crees the species is called '*Hah-ha-way*, so much like the syllables I have given above, that many might imagine my additions no more than a version of the same.

OF THE AUK TRIBE IN GENERAL.

THE bills of these birds are thick, convex, and, except in very few species, are compressed at the sides, and crossed with transverse furrows. The nostrils are linear, and situated parallel to the edge of the bill. The Auks have three toes, all placed forward.

The Auks are, for the most part, inhabitants of the Northern Ocean. They breed in holes, which they sometimes dig in the earth, or in the fissures of rocks; and lay but one egg. They generally rest in these holes during the night. Their feet are placed behind the centre of gravity, which makes some of the species stand with their heads almost upright.

THE GREAT AUK.

The Great Auk is an inhabitant of the Arctic Circle, but is sometimes seen in the northern islands of Scotland. The wings of this bird are incapable of raising it into the air, but serve admirably as paddles when diving. It breeds principally on the shores of Iceland and Spitzbergen, laying one large egg on a cleft of a high rock. The eggs are extremely scarce, and fetch a very high price among collectors, a circumstance which has caused some most ingenious impositions. In one case two of these



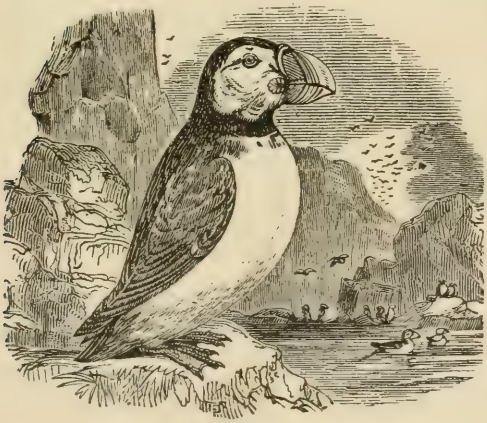
GREAT AUK.

eggs were offered for sale at a shop where natural curiosities are bought and sold. They were offered, I believe, at five pounds each. which being a very low price, excited the suspicions of the buyer, who asked the seller to leave them while he examined them. He examined them accordingly, and although he doubted, yet they looked very genuine indeed. They had the peculiar smell of the Auk's eggs, the hole through which the contents were extracted was perfectly natural, the lining membrane of the egg being still in its place. Just as the price was about to be paid, a visitor happened to enter the shop, who recognised the seller as a man who had sold many of these eggs of late at the same price, but who manufactured all the eggs himself. They were, in fact, nothing but models, exquisitely copied, and accurate in every particular, but yet only a omposition of plaster of Paris with other ingredients.

THE PUFFIN AUK.

The Puffin Auks appear in some parts of England about the beginning of April. Their first employment is the forming of burrows for their young-ones, in the earth or sand. This is the task of the males, who are so intent on the business, as to suffer themselves at that time to be taken with the hand. Some, where there is opportunity, save themselves the trouble of forming holes, by dispossessing Rabbits

The females lay one white egg each; and the males as well as females perform the office of sitting, relieving each other when they go to feed. The young-ones are hatched in the beginning of July. The noise they make when with their young, is a singular kind of humming, much resembling that produced by the large wheels used for the spinning of worsted. On being seized, they emitted this noise with greater violence; and from its being interrupted by their struggling to escape, it sounded not much unlike the efforts of a dumb man to speak.



PUFFIN AUK.

The young-ones are entirely covered with a long blackish down; and, in shape, are altogether so different from the parent birds that no one would at first sight suppose them of the same species. Their bill also is long, pointed, and black, with scarcely any marks of furrows.

The Kamtschadales and Keriles wear the bills of Puffins fastened about their necks with straps. The priests put them on with certain

ceremonies, and the persons are supposed to be always attended with good fortune, so long as they retain them there.

THE LITTLE AUK, OR SEA DOVE.

This neat and singular little bird, with a quaint resemblance to the Colombine tribe, is known to mariners by the name of the Greenland Dove; and in this vicinity it is also called the Pigeon Diver. It inhabits, however, a region where the gentle cooing of the Dove is never heard. It dwells far within the Arctic circle, approaching the very pole, having been obtained by Dr. Richardson from the dreary coast of Melville Island, in the latitude of 75° and 76°, in August, where they were seen by thousands. It is probably almost the last bird seen within the desolate and glacial boundaries of the earth. In Greenland and Spitzbergen they congregate in great flocks; and in the depth of winter, watching the motion of the ice in the offing, when it is broken up by storms, they crowd by thousands into every opening fissure or flaw, in order to snatch up the marine productions on which they subsist. Mr. Audubon found a few breeding on the coast of Labrador. In Newfoundland they are called the Ice-Bird, being the sure harbingers of severe weather, as they seldom proceed far from their inclement natal regions, except when accidentally driven to shore by storms. In the United States their appearance is always solitary, being mere wanderers, as they are also along the milder coasts of Europe. Their uniform predilection is for the hyperboreal regions of their nativity, and they even fatten in storms when not overwhelmed by their fury; as, at these times the small crustacea, and marine insects on which they feed are cast up and brought to the surface in great abundance. At times they appear to fly well, as appears by their extensive accidental migrations, having sometimes been met with considerably inland. The water, however, being their more natural element, they dive with great facility, and are often observed dipping their bills into the water as if drinking.



SEA DOVE.

Those which have been obtained in the vicinity of Boston, usually in the depth of winter, have sometimes been found in Fresh Pond

and so lean and exhausted, by buffeting weather and fatigue, as to allow themselves to be quietly taken up by the hand.

THE PARROQUET AUK.

This bird is about the size of a blackbird. The bill is much compressed, and convex both above and beneath. The nostrils are placed in the middle of it, and pervious, and above these there is a furrow that reaches from the base to the middle. The color of the bill is deep red. From the hinder part of the eye springs a slender tuft of white feathers, which hangs loosely on the neck. The upper parts of the plumage, and the neck, are black; and the under parts, from the breast, white. The wings are short. The legs are of a dirty yellow, and the webs of the feet brown.

This species of Auk is found in flocks in Kamtschatka, in the isles towards Japan, and on the western shores of America. In the nights they harbour in the crevices of rocks. Like most of the tribe, they are indolent and stupid birds, as the following extraordinary method of catching them sufficiently proves: One of the natives places himself in the evening among the rocks, under a loose garment of fur, of a particular shape, with large open sleeves, when the birds, returning to their lodging-places at dusk, run under the skirts and up the armholes, in order to shelter themselves during the night; the man concealed beneath, kills them as fast as they enter, and, by this means, as many are often taken in one evening as he can carry away. Their stupidity likewise occasions them very often to fly on board ships at such times, mistaking these for roosting places: by which navigators have sometimes been taught to avoid the danger of approaching too near the land, either in the evenings, or on the approach of storms.



PARROQUET AUK.

THE RAZOR-BILL AUK.

The Razor-bill Auk abounds among the cliffs of England. It lays, sits, and breeds up its young, on the ledges of the craggy cliffs and steep rocks by the seashore. On the coast of Labrador they abound,

and the thousands of birds there killed for the sake of the breast feathers, which are very warm and elastic, and the quantities of eggs there collected amount to almost incredible numbers. The summer and winter dress of the Razor-bill, though different, do not vary so remarkably as the plumage of many other birds. In the summer dress, the white streak which goes from the bill to the eyes becomes very pure; and the cheeks, throat, and upper part of the front of the neck are of a deep black, shaded with red. In winter the throat and forepart of the neck are white.

OF THE PENGUINS IN GENERAL.

THEIR bill is strong, straight, furrowed at the sides, and bent towards the point. The nostrils are linear, and placed in the furrows. The tongue is covered with strong spines, pointing backward. The wings are small, not unlike fins, and are covered with feathers no longer than those of the rest of the body. The body is clothed with thick short feathers; which have broad shafts, and are placed almost as compactly as scales. The legs are short and thick, situated backwards, near the tail. The toes are four, all placed forward; the interior ones are loose, and the rest webbed. The tail is very stiff, consisting of broad shafts scarcely webbed.



PENGUIN.

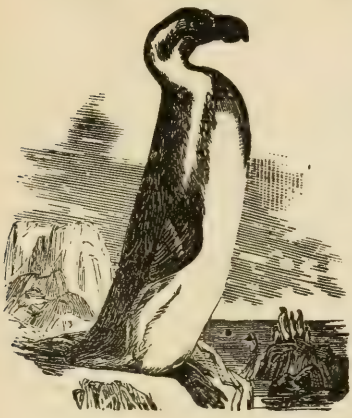
The Penguins seem to hold the same place in the southern parts of the world, that the Auks do in the northern. They resemble these birds in almost all their habits: they walk erect, and are very stupid. They also resemble them in color, and in their mode of feeding, and of making their nests. From the extreme shortness of their wings, they are altogether incapable of flying. They swim with great swiftness; and are fortified against the effects of a long continuance in the cold water, by an abundance of fat. They hatch their young-ones in an erect position; and cackle like Geese.

THE CRESTED PENGUIN.

The Crested Penguins are inhabitants of several of the South Sea Islands. They have the names of Hopping Penguins, and Jumping Jacks, from their action of leaping quite out of the water, sometimes to the height of three or four feet, on meeting with any obstacle in their course. All the Penguins, while swimming, sink above the breast, the head and neck only appearing out of the water; and they row themselves along with their finny wings as with oars.

This species have a greater air of liveliness in their countenance than almost any of the others: yet they are very stupid birds, and so regardless of their own safety, as even to suffer any person to lay hold of them When provoked, they erect their crest in a very beautiful

manner: and we are told, that, when attacked by our voyagers, they ran at them in flocks, pecked their legs, and spoiled their clothes. "When the whole herd was beset, (says Mr. Forster, in his account of one of the South Sea islands,) they all became very bold at once; and ran violently at us, biting our legs, or any part of our clothes."



Their sleep is extremely sound; for Dr. Sparrman accidentally stumbling over one of them, kicked it several yards without disturbing its rest; nor was it until after being repeatedly shaken that the bird awoke. They are very tenacious of life. Mr. Forster left a great number of them, apparently lifeless from the blows they had received, while he went in pursuit of others; but they all afterwards got up and marched off with the utmost gravity.

These birds form their nests among those of the Pelicans, and live in tolerable harmony with them. The female generally lays only a single egg. Their nests are holes in the earth; which they easily form by means of their bills, throwing back the dirt with their feet.

OF THE PETREL TRIBE IN GENERAL.

THE bill is somewhat compressed; the mandibles are equal in length, and the upper one is hooked at the point. The nostrils form a kind of truncated cylinder, lying over the base of the bill. The feet are webbed, and, in the place of a hind toe, have a spur pointing downwards.

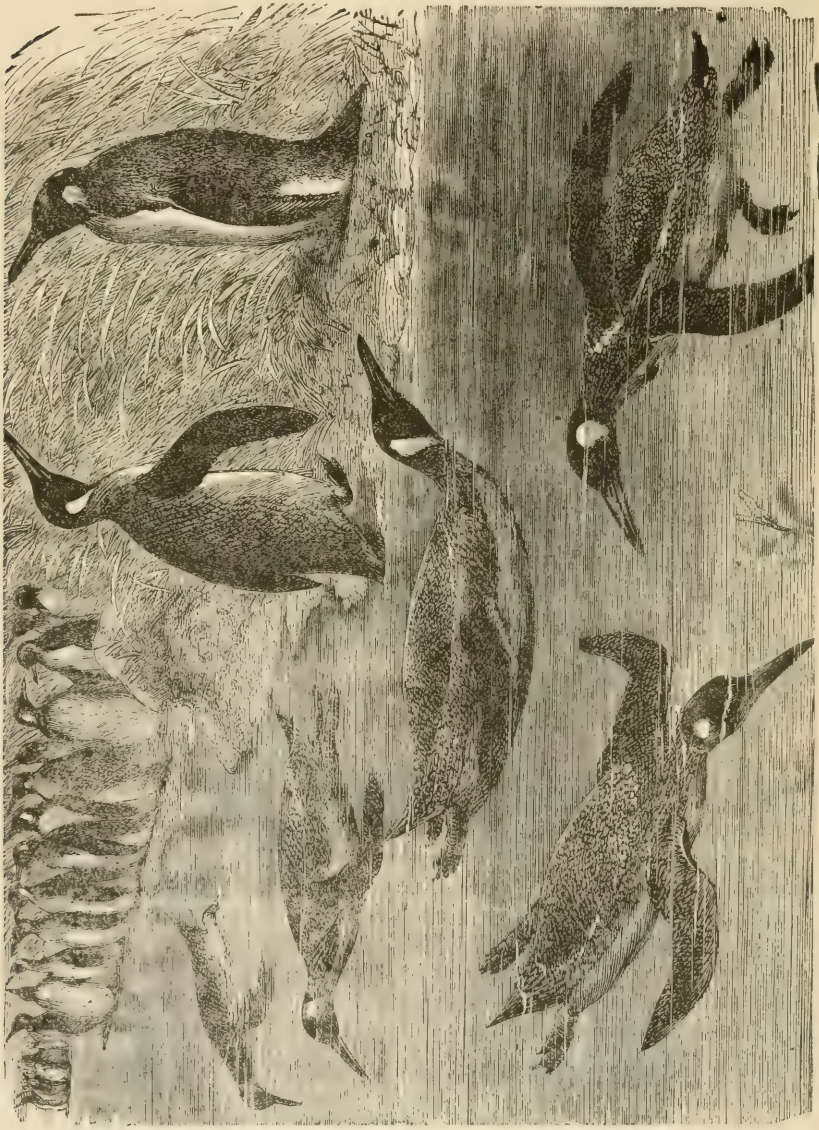
These birds frequent only the ocean, and are seldom to be seen on shore, except during the breeding season. Their legs are bare of feathers a little above the knee. They have the singular faculty of spouting from their bills, to a considerable distance, a large quantity of pure oil; which they do, by way of defence, into the face of any one that attempts to annoy them. This oil has been frequently used in medicine, and, some writers say, with success.

THE STORMY PETREL, AND NORFOLK ISLAND PETREL.

The Stormy Petrel is not larger than a swallow; and its color is entirely black, except the coverts of the tail, the tail itself, and the vent feathers, which are white. Its legs are long and slender.

The bill is about an inch and a half long, black and much hooked at the end. The head as far as the eyes, and the chin, are mottled in waves of brown and white; the rest of the body is of a sooty brown

above, and a deep ash-color beneath. The wings, when closed, exceed the tail by an inch. The legs are of a pale yellow, and part of the toes and webs is black.



Ranging over the expanse of the ocean, and frequently at a vast distance from land, the former of these birds is enabled to brave the utmost fury of the storms. Even in the most tempestuous weather it is frequently observed by the mariners, skimming with almost incredible velocity, along the hollows of the waves, and sometimes



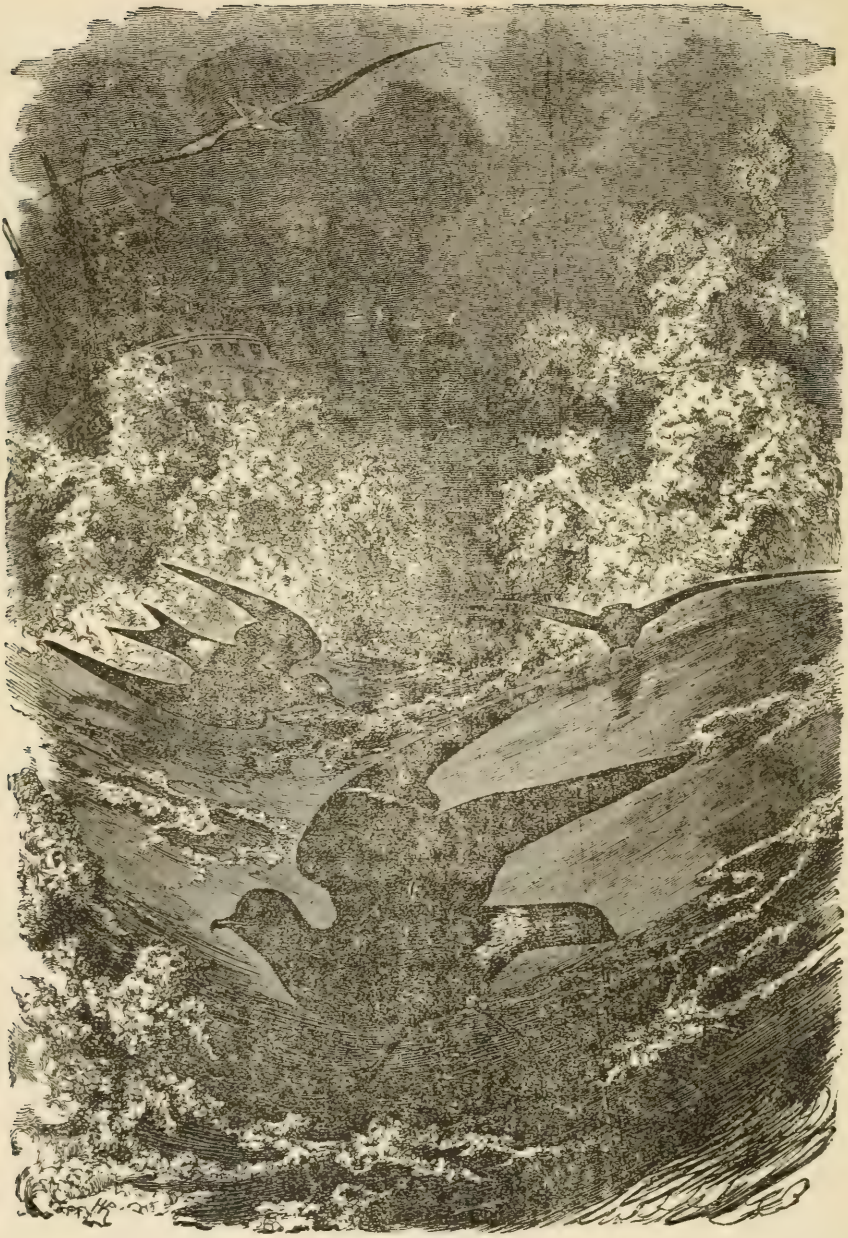
NORFOLK ISLAND PETRELS.

over their summits. It often follows vessels, in great flocks, to pick up any thing that is thrown overboard; but its appearance is always looked upon by the sailors as the sure presage of stormy weather in the course of a few hours after. It seems to seek for protection from the fury of the wind in the wake of the vessels; and from the same reason it very probably is, that it often flies along between two surges.

The nests of these birds are found in the Orkney Islands, under loose stones, in the months of June and July. The Stormy Petrels live chiefly on small fish, and, although mute by day, are very clamorous during the night.

The inhabitants of the Feroe Islands are said to draw a wick through the bird, which, being lighted at one end, serves for a candle, the flame being fed by the fat and oil of the body.

The other species of Petrel here mentioned are found in great numbers in Norfolk Island, where they burrow in the sand like Rabbits. On Mount Pit, the highest land in the island, the ground was as full of holes as a Rabbit-warren, and an immense number of aquatic birds burrowed and built their nests in them. These, during the day, were at sea; but as night approached they returned in vast flocks. The settlers lighted small fires every night on this mount, around which the birds dropped as fast as the people could pick them up and kill them; for the wings of many sea-birds are so long as to prevent their rising till they can ascend some small elevation. Hunter says that eighteen thousand birds of different species were killed in the space of about six weeks.



STORMY PETRELS.

THE COMMON GUILLEMOT.

The Common Guillemot makes its appearance on our coasts in the beginning of spring, and inhabits the cliffs overhanging the sea. Each female deposits one egg on a naked ledge of rock, and sits upon it with great perseverance, even suffering itself to be taken by hand. The egg is usually a pale green, streaked and blotched with brown, but is very variable both in color and markings. The length of the bird is fifteen inches.

THE FULMAR PETREL.

The Fulmar Petrel is an inhabitant of the Arctic circle, but breeds abundantly in St. Kilda and the Orkneys. The inhabitants of those islands consider the Fulmar as one of their principal means of subsistence, and to obtain the birds they expose themselves to the greatest dangers. The feathers of the Fulmar Petrel are used for their beds, its flesh they eat, its oil is delicate and gives an excellent light when used in a lamp, besides which it is considered a good remedy for wounds. To obtain the birds, the inhabitants wait until they are nearly fledged, when they lower themselves down the face of the most fearful precipices, saved from destruction merely by a rope. This rope is one of the principal items of the property of the people who live in the Orkneys. It is sometimes made of hide, but the best ropes are woven of hair, and are found to be less liable to fray against the rocks than if they were made of any other material. There are many stories of the dangers encountered by the daring cragsman, but there is no space for their insertion.

The Fulmar Petrel lays one white egg, large and brittle, which is imbued with the peculiar oily odor that characterises the bird. The food of the Fulmar consists of the flesh and blubber of dead whales and other cetacea, and also of molluscs and crustacea. The length of the bird is sixteen inches.

OF THE ALBATROSS TRIBE.

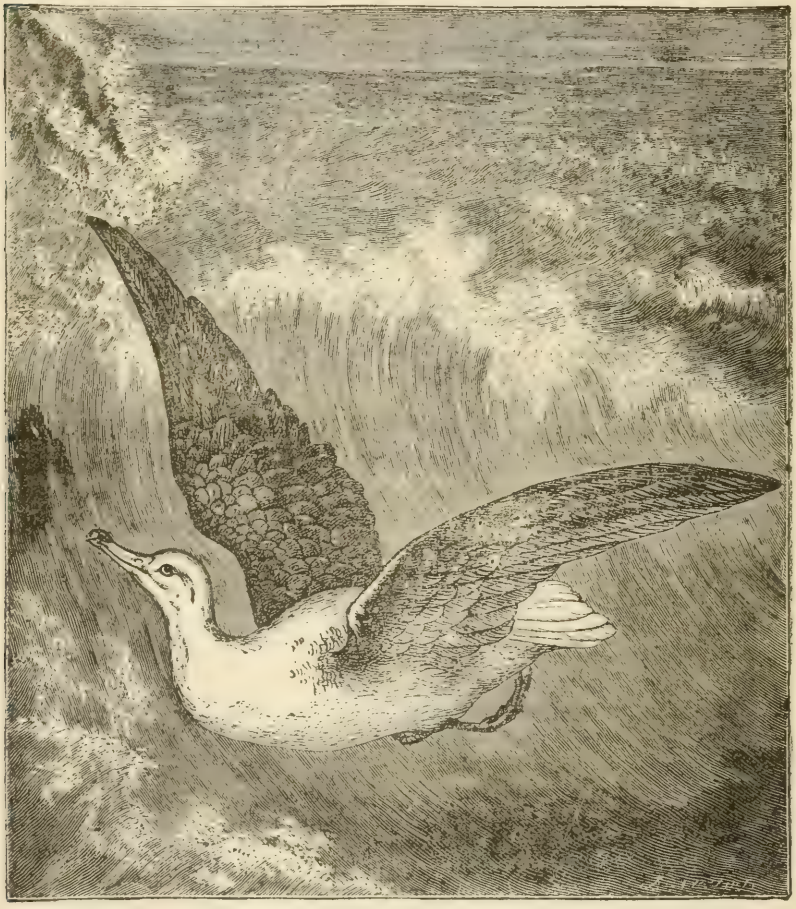
There are but four species of Albatross; of which three are found principally in the seas of hot climates, and the fourth is confined to those within the Antarctic Circle. Their bill is straight: the upper mandible hooked at the point; and the lower truncated, or appearing as if cut off. The nostrils are oval, wide, prominent, and lateral; the tongue is very small; and the feet have each three toes, all placed ward.

THE WANDERING ALBATROSS, OR MAN-OF-WAR BIRD.

In size these birds are sometimes as large as a Swan. Their genera. color is white, the upper parts are marked with black lines. The quill

feathers are black; and the tail is rounded, and of a lead color. The bill is of a pale yellow, and the legs are flesh-colored.

These birds are found in most seas, but chiefly in those within the Tropics: they are, however, often seen about the Cape of Good Hope; and, towards the end of July, they collect in great numbers in Kamtschatka, and the seas which separate that part of Asia from America.



ALBATROSS.

Its powers of flight are exceeding great; it is almost constantly on the wing, and is equally at ease during the stillest calm, or flying with meteor-like swiftness before the most furious gale.

They are exceedingly voracious, and feed on various species of fish and molluscæ. The shoals of flying-fish, when persecuted by their enemies of the deep, make their appearance for a short flight in the air, and suffer greatly from the voracity of these birds. They also often pursue the shoals of salmon into the mouths of large rivers, and

so gorge themselves as, notwithstanding their otherwise extraordinary powers of flight, to be prevented by their weight and consequent stupidity even from rising.

In the West Indies the appearance of these birds is said to foretell the arrival of ships; this indeed is sometimes true, and arises from a very natural cause. They always fish in fine weather; so that when the wind is boisterous out at sea, they retire into the harbors, where they are protected by the land; and the same wind that blows them in, oftentimes brings also vessels to seek a retreat from the storm.

Their voice very much resembles the braying of an Ass. In South America they build their nests about the end of September; these are formed of earth, on the ground, and are from one to three feet high. The eggs are as large as those of a goose, and have the singular property of their white not becoming hard by boiling. When attempted to be seized, these birds make a vigorous defence with their bills.

Many of the Indians set a high value on the feathers of these birds; which they use for arrows, as they last much longer than those of any other birds. The natives of the South Sea Islands watch the arrival of the Man-of-war Birds at the rainy season; and, when they observe them, they launch from their canoes into the water a light float of wood, baited with a small fish. When one of the birds approaches it, a man stands ready with a pole, about eighteen feet in length; and on its pouncing, he strikes at the bird, and seldom fails of bringing it down. If, however, he miss his aim, he must wait for some other bird, for that will no more be tempted to approach. The cock birds are reckoned the most valuable; and sometimes even a large hog is given in exchange for one of these.

The inhabitants of Kamtschatka make buoys to their nets, of the intestines of the Man-of-war Birds, which they blow up like bladders. They also make tobacco-pipes and needle-cases of the bones of the wings; and use them likewise for heckling the grass, which serves them instead of flax. The flesh is very hard and dry.

THE PELICAN TRIBE IN GENERAL.

In this tribe the bill is long and straight; and the end either hooked, or sloping. The nostrils are placed in a furrow that runs along the sides of the bill, and, in most of the species, they are scarcely perceptible. The face, except in two species, is destitute of feathers. The gullet is naked, and capable of great extension. The number of toes is four, and these are all webbed together.

The Pelicans are gregarious; and, in general remarkable for their extreme voracity. They are very expert in seizing fish with their long and apparently unwieldy bills; and many of the species are rendered of use to mankind, by being trained to fishing. In general, they keep out far at sea; but some of them are found occasionally in the interior parts of continents.

THE WHITE, OR GREAT PELICAN.

This Pelican, when full grown, is larger than a Swan. The bill is about sixteen inches long, and the skin between the sides of the lower mandible is very dilatable. This skin is bare, and is capable of containing many quarts of water. The tongue is so small as scarcely to be distinguishable. The sides of the head are naked, and on the back of the head there is a kind of crest. The whole plumage is whitish, suffused with a pale blush color, except some parts of the wings, which are black. The legs are lead-colored, and the claws grey.



PELICANS.

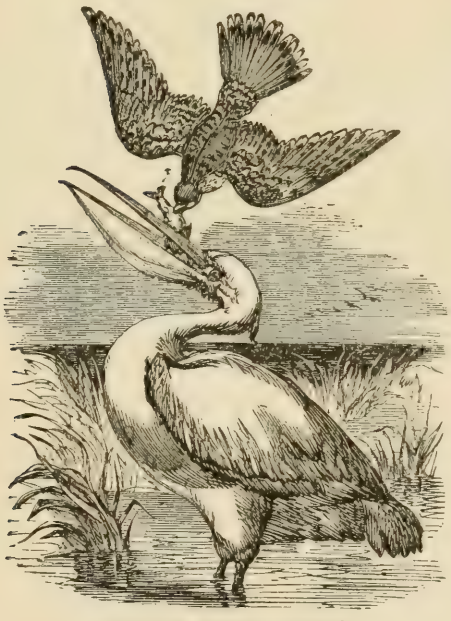
The bag in the lower mandible of the bill of this bird is one of the most remarkable members that is found in the structure of any animal. Though the sides to which it is attached, are not above an inch asunder, it may be extended to an amazing capacity; and when the bird has fished with success, its size is almost incredible. It will contain a man's head with the greatest ease; and, it has been said, that even a man's leg, with a boot on, has been hidden in one of these pouches. In fishing, the Pelican fills this bag, and does not immediately swallow his prey; but when the bag is full, he returns to the shore to devour at leisure the fruits of his industry. He is not long in digesting his food; for he has generally to fish more than once in the course of a day.

At night, when the toils of the day are over, these birds, which are lazy and indolent when they have glutted themselves with fish, retire a little way on the shore to take their rest for the night. Their attitude in that state is with their head resting against the breast. They remain almost motionless till hunger calls them to break off their repose: thus they pass nearly the whole of their life in eating and sleeping. When thus incited to exertion, they fly from the spot, and, raising themselves thirty or forty feet above the surface of the sea, turn their head with one eye downward, and continue to fly in that position till they see a fish sufficiently near the surface. They

then dart down with astonishing swiftness, seize it with unerring certainty, and store it in their pouch. Having done this, they rise again, and continue the same actions till they have procured a competent stock.

Whence it was that the ancients attributed to this stupid bird the admirable qualities and parental affections for which it was celebrated amongst them, I am unable to imagine; unless, struck with its extraordinary figure, they were desirous of supplying it with propensities equally extraordinary. For, in truth, the Pelican is one of the most heavy, sluggish, and voracious, of all the feathered tribes; and is but ill-fitted to take those vast flights, or to make those cautious provisions, which have been mentioned.

It is, however, by no means destitute of natural affection, either towards its young-ones, or towards others of its own species. Clavigero, in his History of Mexico, says, that sometimes the Americans, in order to procure, without trouble, a supply of fish, cruelly break the wing of a live Pelican, and, after tying the bird to a tree, conceal themselves near the place. The screams of the miserable bird attract other Pelicans to the place, which, he assures us, eject a portion of the provisions from their pouches, for their imprisoned companion. As soon as the men observe this, they rush to the spot, and, after leaving a small quantity for the bird, carry off the remainder.



FISH HAWK ROBBING A PELICAN.

The female feeds her young-ones with fish macerated for some time in her bag. Labat informs us, that he caught two Pelicans, when very young, and tied them by the leg to a post stuck into the ground; and he had the pleasure of seeing one of the old ones come for several days to feed them, remaining with them the greatest part of the day, and passing the night on the branch of a tree that hung over them. By this means they all three became so familiar as to suffer themselves to be handled; and the young-ones always took the fish that he offered to them, storing it first in their bag, and then swallowing it at leisure.

The Pelican has often been rendered domestic; and this writer assures us, that he saw one among the Americans so well trained, that it would at command, go off in the morning, and return before

night, having its pouch distended with prey; part of which it was made to disgorge, and the rest it was permitted to retain for its trouble.

According to the account of Faber, a Pelican was kept in the court of the Duke of Bavaria above forty years. He says that it seemed fond of being in the company of mankind; and that when any one sang or played on an instrument, it would stand perfectly still, turn its ear to the place, and, with its head stretched out, would seem to pay the utmost attention. We are told that the Emperor Maximilian had a tame Pelican that lived more than eighty years, and always attended his soldiers when on their marches. M. de Saint Pierre mentions his having seen, at Cape Town, a large Pelican playing with a great dog, whose head she often, in her frolic, took into her enormous beak.

When a number of Pelicans and Corvorants are together, they are said to have a very singular method of taking fish. They arrange themselves in a large circle, at some distance from land: and the Pelicans flap with their extensive wings above, on the surface, while the Corvorants dive beneath: hence the fish contained within the circle are driven before them toward the land; and as the circle lessens by the birds coming close together, the fish at last are brought into a small compass, when their pursuers find no difficulty in filling their bellies. In this exercise they are often attended by various species of gulls, which likewise obtain a share of the spoil.

THE FRIGATE PELICAN.

The Frigate Pelican, or Man-of-war Bird is chiefly seen on the tropical seas, and generally on the wing. They are abundant in the Island of Ascension, India, Ceylon and China. In the South Sea they are seen about the Marquesas, Easter Isles and New Caledonia, also at Otaheite. Dampier saw them in great plenty in the island of Aves in the West Indies, and they are common off the coast of East Florida, particularly around the reefs or keys, often assembled in flocks of from fifty to a thousand. They are also not uncommon during summer, along the coasts of the Union as far as South Carolina, and breed in various places, retiring to warmer latitudes on the approach of cool weather.

The Frigate Bird is often seen smoothly gliding through the air, with the motions of a Kite, from one to two hundred leagues from the land, sustaining these vast flights with the greatest apparent ease, sometimes soaring so high as to be scarcely visible, at others approaching the surface of the sea, where, hovering at some distance, it at length espies a fish, and darts upon it with the utmost rapidity, and generally with success, flying upwards again, as quick as it descended. In the same manner it also attacks the Boobies and other marine birds which it obliges to relinquish their prey.

They breed abundantly in the Bahamas, and are said to make their

nests on trees, if near: at other times they lay on the rocks; the eggs one or two, are of a flesh color, marked with crimson spots. The young birds covered with a greyish-white down, are assiduously attended by the parents who are then tame, and easily approached. When alarmed, like Gulls, they as readily cast up the contents of their pouch, as these birds do of the stomach. The general plumage is brownish-black, with violet reflections, except the wing coverts which have a rufous tinge.



FRIGATE PELICAN.

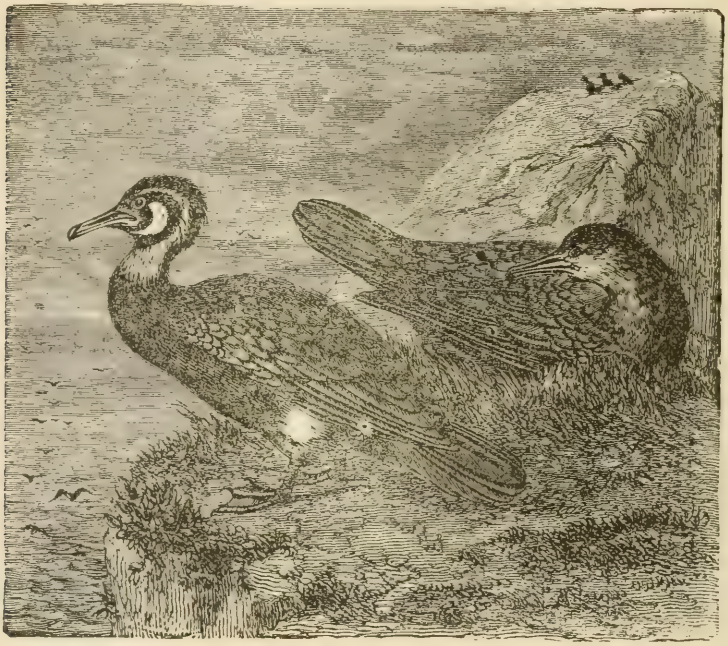
THE CORVORANT.

These birds are common on many of our sea-coasts. They build their nests on the highest parts of the cliffs, that hang over the sea; and lay three or more pale green eggs, about the size of those of a Goose. In winter they disperse along the shores, and visit the fresh waters, where they commit great depredations among the fish. They are remarkably voracious; having a most rapid digestion, promoted perhaps, by an infinite number of small worms which fill their intestines. They are very wary, except when they have filled their stomach; but in this case they sometimes become so stupid, that it is easy to take them in a net, or even by means of a noose thrown over their heads.

Their smell when alive, is excessively rank and disagreeable; and their flesh is so disgusting, that even the Greenlanders, among whom they are very common, will scarcely eat them.

It is no uncommon thing to see, on the rocks of the sea-coast, twenty of these birds together, with extended wings, drying themselves in the wind; in this position they remain sometimes nearly an hour, without once closing their wings, and, as soon as these are suf

ficiently dry to enable the feathers to imbibe the oil, they press this substance from the receptacle on their rumps, and dress the feathers with it. It is only in one particular state that the oily matter can be spread on them—when they are somewhat damp; and the instinct of the birds teaches them the proper moment.



CORVORANTS.

The skins of Corvorants are very tough, and are used by the Greenlanders, when sewed together and put into proper form, for garments. And the skin of the jaws serves that people for bladders to buoy up their smaller kinds of fishing darts. In China great numbers of tame Corvorants are taught to catch fish for the benefit of their owners. The birds so employed are kept in a state of captivity from the moment of their birth. When old enough, they are taken to the water side, and carefully taught to bring to their master the fishes they procure.

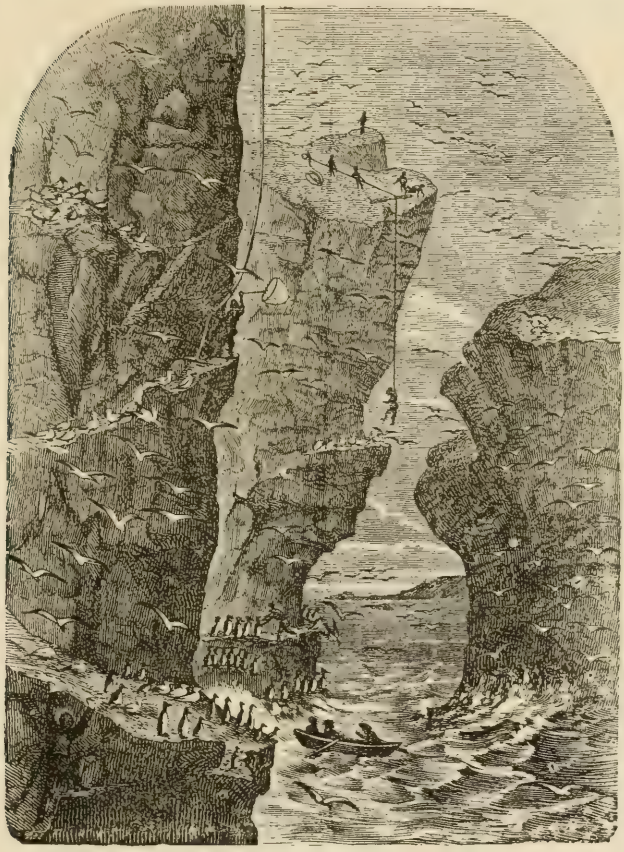
THE GANNET, OR SOLAN GOOSE.

These birds are insatiably voracious, and yet they are somewhat particular in their choice of prey, disdaining, unless in great want, to eat any food worse than Herring or Mackerel. No fewer than one hundred thousand Gannets are supposed to frequent the rocks of St. Kilda; and of these, including the young ones, at least twenty thousand are annually

killed by the inhabitants for food. Allowing that the birds remain in this part of the country about six months in the year, and that each bird destroys five Herrings in a day, which is considerably less than the average, we have at least ninety millions of the finest fishes in the world annually devoured by a single species of Saint Kilda Birds.

The Gannets frequent nearly all the Hebrides, and are sometimes seen on the Cornish Coast; but they seldom occur in any other parts of Europe. They are migratory; and first appear in the above islands about the month of March: they remain till August or September.

They build their nest on the highest and steepest rocks they can find near the sea; laying, if undisturbed, only one egg in the year; but if that be taken away, they will lay another, and if that be also taken, a third, but never more in the same season. The egg is white, and is rather smaller than that of the Goose. The nests are composed of grass, sea plants, or any refuse fitted for the purpose that the birds find floating on the water. The young Gannets, during the first year, differ greatly from the old ones; for they are of a dusky hue.



CATCHING GANNETS.

These birds, when they pass from place to place, unite in small flocks of from five to fifteen; and, except in very fine weather, they fly low, near the shore, but never pass over it: doubling the capes and projecting parts, and keeping at nearly an equal distance from the land. During their fishing they rise high into the air, and sail aloft over the shoals of Herrings or Pilchards, much in the manner of Kites. When they observe the shoal crowded thick together, they close their wings to their sides, and precipitate themselves, head foremost into

the water, dropping almost like a stone. Their eye in this act is so correct, that they never fail to rise with a fish in their mouth.

Mr. Pennant says, that the natives of Saint Kilda hold these birds in much estimation, and often undergo the greatest risks to obtain them. Where it is possible, they climb up the rocks which they frequent, and in doing this they pass along paths so narrow and difficult, as, in appearance, to allow them barely room to cling, and that too at an amazing height over a raging sea. Where this cannot be done, the fowler is lowered by a rope from the top; and, to take the young-ones, oftentimes stations himself on the most dangerous ledges. Unterrified, however, he ransacks all the nests within his reach; and then, by means of a pole and his rope, he moves off to other places to do the same.

We are told also, that to take the old birds, the inhabitants tie a Herring to a board, and set it afloat; so that, by falling furiously upon it, the bird may break its neck in the attempt.

THE BOOBY.

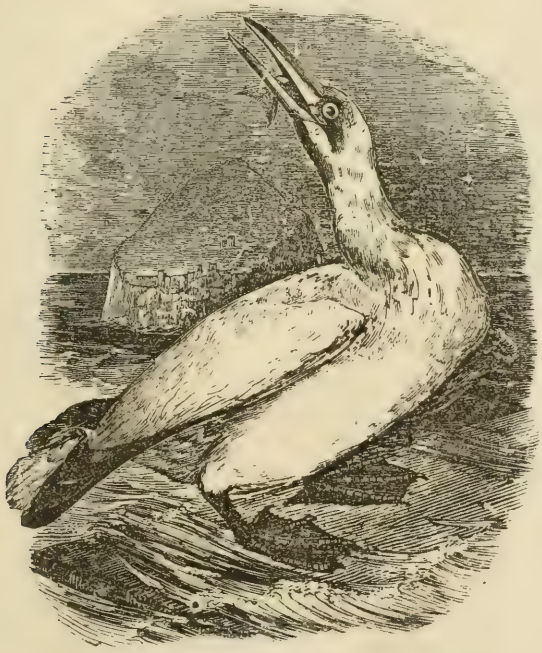
This and some other species have been denominated Boobies from their excessive stupidity; their silly aspect; and their habit of continually shaking their head and shivering, when they alight on the yards or rigging of vessels, where they often suffer themselves to be taken with the hand. In their shape and organization they greatly resemble the Corvorants.



THE BOOBY

The Boobies have an enemy of their own tribe, that perpetually harasses them. This is the Frigate Pelican; which rushes upon them, pursues them without intermission, and obliges them by blows with its wing and bill, to surrender the prey that they have taken, which it instantly seizes and swallows.

Dampier gives us a curious account of the hostilities between what he calls Man-of-war Birds, and the Boobies, in the Alcrane Islands, on the coast of Yucatan. "These birds were crowded so thick, that I could not (he says) pass their haunts without being incommoded by their pecking. I observed that they were ranged in pairs; which made me presume that they were male and female. When I struck them some flew away; but the greater number remained, and would not stir, notwithstanding all I could do to rouse them. I remarked also, that the Man-of-war Birds and the Boobies always placed sentinels over their young-ones, especially when they went to sea for provisions. Of the Man-of-war Birds, many were sick or maimed, and seemed unfit to procure their subsistence. They lived not with the rest of their kind; being either expelled from society, or separated by choice, and were dispersed in different places, probably that they might have a better opportunity of pillaging. On one of the islands I once saw more than twenty sally out from time to time into the open country, in order to carry off booty, and return again almost immediately. When one of them surprised a young Booby that had no guard, he gave it a violent peck on the back to make it disgorge; which it did instantly: it cast up one or two fish about the bulk of one's hand, which the old Man-of-war Bird swallowed. The vigorous ones play the same game with the old Boobies which they find at sea. I saw one myself, which flew right against a Booby; and, with one stroke of its bill, made him deliver up a fish that he had just swallowed. The Man-of-war Bird darted so rapidly, as to catch this fish in the air before it could fall into the water."



BOOBY OF THE BASS ROCK.

THE FISHING CORVORANT

The following account of this Chinese bird, by Sir George Staunton, is the most authentic of any that has yet been given to us:



CHINESE FISHING WITH CORVORANTS.

"The embassy (he says) had not proceeded far on the southern branch of the Imperial Canal, when they arrived in the vicinity of a place where the Leutze, or famed fishing-bird of China, is bred, and instructed in the art and practice of supplying his owner with fish in great abundance.

"On a large lake close to this part of the canal, and to the eastward of it, are thousands of small boats and rafts, built entirely for this species of fishing. On each boat or raft are ten or a dozen birds, which at a signal from the owner, plunge into the water; and it is astonishing to see the enormous size of the fish with which they return, grasped within their bills. They appeared to be so well trained, that it did not require either ring or cord about their throats, to prevent them from swallowing any portion of their prey, except what the master was pleased to return to them for encouragement and food. The boat used by these fishermen is of a remarkably light make; and is often carried to the lake, together with the fishing birds, by the men who are there to be supported by it."



FISHING CORVORANT.

M. de Buffon says, that they are regularly educated to fishing, as men rear Spaniels or Hawks, and one man can easily manage a hundred. The fisherman carries them out into a lake, perched on the gunnel of his boat; where they continue tranquil, and wait for his orders with patience. When arrived at the proper place, on the first signal, each flies a different way, to fulfil the task assigned to it. It is pleasant on this occasion to behold with what sagacity they portion out the lake or canal where they are upon duty. They hunt about, they plunge, they rise a hundred times to the surface, until they have at last found their prey. They then seize it by the middle, and carry it to their master. When the fish is too large, they assist each other; one seizes it by the head, and another by the tail, and in this manner they carry it to the boat together There the boatman stretches out one of his long oars, on which they perch, and after being delivered of their burden, again fly off to pursue their sport. When they are wearied, he suffers them to rest awhile; but they are never fed until their work is over In



CORVORANT

this manner they supply a very plentiful table; but still their natural gluttony cannot be reclaimed even by education. They have always a string fastened round their throats while they fish, for the purpose of preventing them from swallowing their prey; as they would otherwise at once satiate themselves, and discontinue their pursuit.

OF THE DARTER TRIBE IN GENERAL.

These birds have a small head, and a very long and slender neck. Their bill is long, straight, and sharp-pointed, and, at its base, are the nostrils, situated in a long and conspicuous fissure. The face and chin are bare of feathers. The legs are short, and the four toes are all well webbed together.

There are but three ascertained species of this tribe, and these are confined to the hot latitudes; two to America, and the third principally to Ceylon and Java. They live almost entirely on fish, which they take by darting forward their bill. They generally build their nests and roost in the trees.

THE BLACK-BELLIED DARTER, AND THE WHITE-BELLIED DARTER.

In countries where every one's ideas run on poisonous animals, any person who sees only the head and neck of the Black-bellied Darter, while the rest of the body is concealed among the foliage, would naturally mistake it for one of those serpents accustomed to climb into and reside in trees. And the illusion is increased by its having all the tortuous motion of those reptiles. In whatever situation it happens to be, whether swimming, flying, or at rest, the most apparent and remarkable part of its body is its long and slender neck, which is constantly in motion, except during flight, when it becomes immovable and extended, and forms, with the tail, a perfectly straight and horizontal line.



BLACK-BELLIED DARTER.

The principal food of the Black-bellied Darter is fish, which, if small enough, it swallows entire; but, if they are too large, it flies off with them to some rock or stump of a tree, where, fixing them under one of its feet, it tears them to pieces with its bill.



AMERICAN DARTER.

Though water is its principal element, yet this bird builds its nest on rocks and trees; but always on those so near to the river, that it can, in case of danger, precipitate itself into it.

There are few birds that exceed these in sagacity and cunning, particularly when surprised on the water. In this situation it is almost impossible to kill them. Their head, which is the only part exposed, disappears the instant the flint touches the hammer of the gun; and, if once missed, it is in vain to think of approaching them a second time, as they never show themselves more than once, unless at very great distances, and then only for the moment necessary for breathing. In short, so cunning are they, that they will often baffle the sportsman, by plunging at the distance of a hundred paces above, and rising again to breathe at the distance of more than a thousand below him; and if they have the good fortune to find any reeds, they conceal themselves there, and entirely disappear.

These birds are found in several parts of the south of Africa, and in the islands of Ceylon and Java.

The *White-bellied Darters*, according to the account of Mr. Bartram, are natives of America. He states, that they have a peculiar manner of spreading out their tail, like an unfurled fan. They delight to sit in little peaceable communities, on the dry limbs of trees, hanging over the still waters, with their wings and tail expanded; and, when approached, they drop from the limb into the water, as if dead, and for a minute or two are not seen, when, on a sudden, at a vast distance, their long slender heads and necks are raised, and have much the appearance of snakes, as no other parts of the body are to be seen when swimming, except sometimes the tip of the tail. In the heat of the day they are often seen in great numbers sailing high in the air over the rivers



WHITE-BELLIED DARTER.

In remote districts, seldom visited by man, these birds evince so little shyness, that it is not difficult to procure specimens; all that is requisite is to find out the trees upon which they sleep and towards evening to take up a position in the vicinity and patiently await their coming. When one of them is shot, all the survivors tumble, as if dead, into the water below, where they immediately dive, and when they come up again, only show their necks above the surface; moreover they generally ensconce themselves among the floating weeds, where they are hidden from observation.

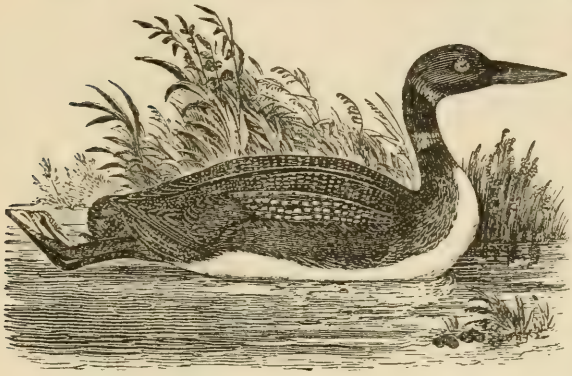
OF THE DIVER TRIBE IN GENERAL.

In the Divers the bill is slender, pointed, and nearly straight; the nostrils are linear, and situated at the base. The tongue is long and slender; and the legs are placed backwards near the tail.

These birds walk awkwardly, and with great difficulty; but they fly very swiftly along the surface of the water, and swim and dive with remarkable dexterity. One division of them, the Guillemots, chiefly inhabit the sea; but the rest seldom frequent any but rivers:

THE NORTHERN DIVER, OR LOON.

Every part and proportion of this bird is so incomparably adapted to its mode of life, that in no instance do we see the wisdom of God in the creation to more advantage. The head is sharp; and smaller than the part of the neck adjoining, in order that it may pierce the water: the wings are placed forward, and out of the centre of gravity; for a purpose which will be noticed hereafter: the thighs are quite backward, in order to facilitate diving; and the legs are flat, and almost as sharp backwards as the edge of a knife, that, in striking they may easily cut the water: while the feet are broad for swimming; yet so folded up, when advanced forward to take a fresh stroke, as to be full as narrow as the shank. The two exterior toes of the feet are longest; and the nails are flat and broad, resembling those of the human body; which give strength to the bird, and increase its power of swimming. The foot, when expanded, is not at right angles to the leg; but the exterior part, inclining towards the head, forms an acute angle with the body: the intention being, not to give motion in the line of the legs themselves, but by the combined impulse of both in an intermediate line, the line of the body.

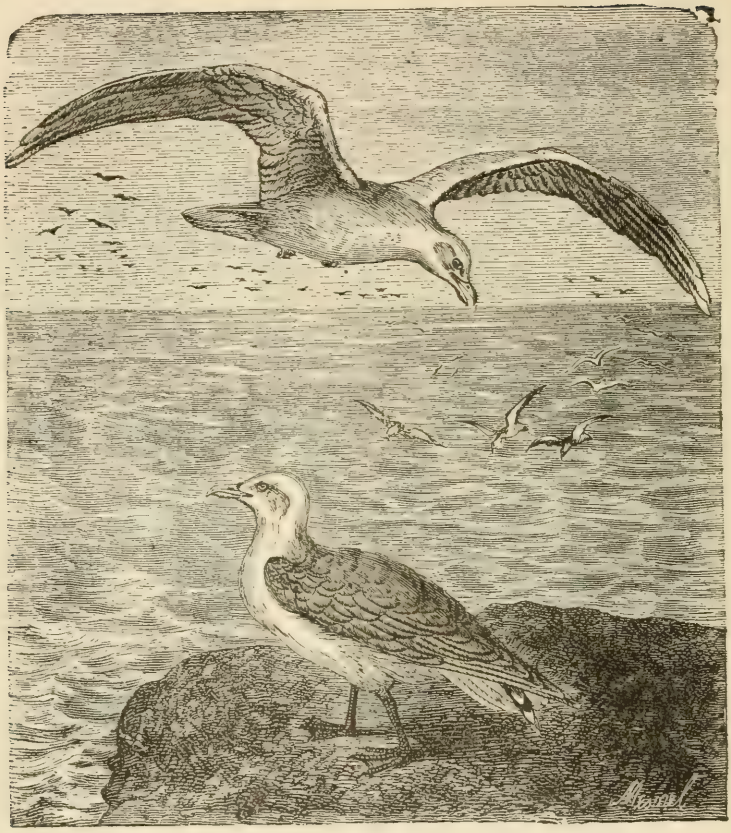


NORTHERN DIVER.

Most people who have exercised any degree of observation, know that the swimming of birds is nothing more than walking in the water, where one foot succeeds the other as on the land; but no one, as far as I am aware, says the Rev. Mr. White, has remarked that diving-fowls, while under water, impel and row themselves forward by a motion of their wings, as well as by the impulse of their feet: yet such is really the case, as any one may easily be convinced, who will observe ducks when hunted by dogs in a clear pond. Nor do I know that any one has given a reason why the wings of diving-fowls are placed so forward: doubtless, not for the purpose of promoting their speed in flying, since that position certainly impedes it: but probably for the increase of their motion under water, by the use of four oars instead of two; and were the wings and feet nearer together, as in land-birds, they would, when in action, rather hinder than assist one another.



NORTHERN DIVER.



SEA GULLS.

OF THE GULLS IN GENERAL.

THEIR bill is strong, straight, and slightly hooked at the point. On the under part of the lower mandible there is an angular prominence. The nostrils are oblong and narrow, placed in the middle of the bill; and the tongue is somewhat cloven. The legs are short, and naked above the knees; and the back toe is small.

The Gulls frequent chiefly the northern countries, and their habits differ from those of most other water-fowl. They do not dive so much as others; but they usually feed on the gregarious species of fish and their fry, which they catch near the surface of the water. When the sea is rough they come into the harbors, where they feed on worms. They are exceedingly voracious; and, when terrified, throw up their undigested food. By the lightness of their body, and the length of their wings, they are enabled to fly with considerable rapidity. The young-ones do not become of the same color with the old birds, until their third year. The eggs are eatable, but their flesh is generally tough and unpleasant.

THE SKUA GULL.

The Skua Gull inhabits Norway, the Feroe Islands, and other parts of the north of Europe. It is the most formidable bird of its tribe; its prey being not only fish, but (what is wonderful in a web-footed bird) all the lesser sorts of water-fowl, and (according to the account of Mr. Schroter, a surgeon of the Feroe Isles) Ducks, Poultry, and even young Lambs.

Dogs, Foxes, and other animals are instantly attacked and so severely dealt with by the wings and beak of the Skua, as to be driven to a hasty retreat, and no bird is permitted to approach with impunity; other Gulls are however exposed to the attacks of these robbers, probably because, being the most diligent pursuers of fish, they are sure to find from their exertions a never failing supply. The nest consists of dried weeds. There are two eggs of a dark olive-green blotched with brown.

In defending its offspring it has the fierceness of the Eagle. When the inhabitants of the Feroe Islands visit the nest of the Skua Gull, the parent birds attack them with such force, that, if they hold a knife perpendicularly over their heads, the Gulls will sometimes transfix themselves in their fall on the plunderers.

In Foula, the Skua Gulls are privileged; being said to defend the flocks from the attacks of the Eagle, which they beat off and pursue with great fury; so that even that rapacious bird seldom ventures to approach the places which they inhabit. The natives of Foula on this account impose a fine upon any person who destroys one of these useful defenders: and deny that they ever injure their flocks or poultry; but imagine them to live only on the dung of the Arctic Gull and other larger birds.



ARCTIC GULLS IN PURSUIT.

BLACK-HEADED GULL.

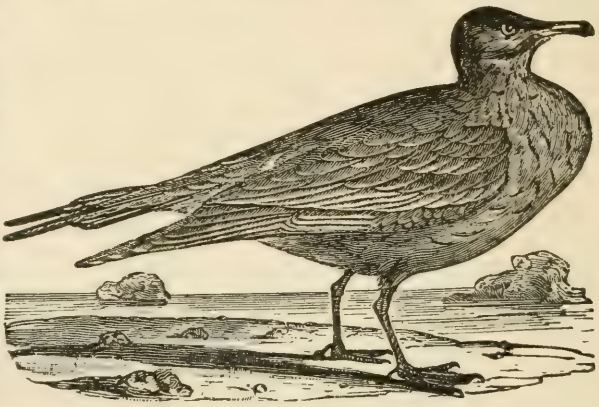
This species, very common in most parts of America, is also frequent in Europe, particularly in the warmer parts, as the coasts of Sicily, Spain, and the islands of the Mediterranean; elsewhere in that continent it is rare. In America it is found as far south as Cayenne and Mexico, but does not appear to inhabit far north of the limits of the Union. On the

coast of New Jersey they make their appearance in the latter part of April, and are soon discovered by their familiarity and noise; companies are even seen at times around the farm house, or coursing along the river shores, attending upon the track of the fishermen for garbage, gleaning among the refuse of the tide; or scattering over the marshes and plowing fields, they collect, at this season, an abundant repast of worms, insects and their larvæ. Great numbers are also seen collected together to feed upon the prolific spawn of the King-Crab. While thus engaged, if approached, they rise as it were in clouds, at the same time squalling so loudly that the din may be heard for two or three miles.

The Black-Headed Gulls breed in the marshes of New Jersey, but are not seen at this period in New England, and are indeed at all times rare in that quarter. The eggs, three in number, are of a drab or olive grey, thinly marked with small irregular touches of pale purple, and dilute brown. They measure two and a quarter inches by one and a half. Being apparently a somewhat tender species, they retire to the south early in autumn, and on commencing their migrations, if the weather be calm, they are seen to rise up in the air spirally, all loudly chattering as it were in concert, like a flock of cackling hens, the note changing at short intervals into a *'haw, 'ha, 'ha, 'ha, 'haw*, the final syllable lengthened out into an excessive and broad laugh. After ascending to a considerable height, they all move off, by common consent, in the line of their intended destination.

RICHARDSON'S JAGER.

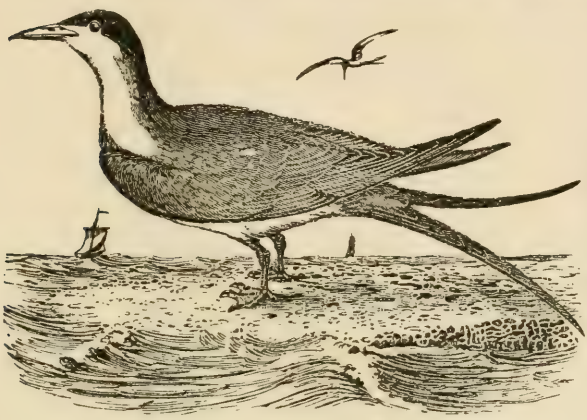
This species, according to Dr. Richardson, breeds in considerable numbers in the Barren Grounds, at a distance from the coast, in the latitude of about 65°. It feeds on shelly molusca, which abound in the small lakes of the fur countries: and it harasses the Gulls in the same way with others of the genus. This species is occasionally seen in winter, in the inland bays in the vicinity of Boston, flying about in pairs, or sitting on the water.



RICHARDSON'S JAGER.

THE GREAT, OR COMMON TERN.

The Common Tern is an inhabitant of both continents, being met with on the coasts of most parts of Europe as far north as the ever inclement shores of Groenland and Spitzbergen; it is also found on the Arctic coasts of Siberia and Kamtschatka. In the winter it migrates to the Mediterranean, Madeira, and the Canary Islands. In America, it breeds along all the coasts of the Northern and Middle States, and penetrates north into the fur countries, up to the 57th parallel of latitude. They also breed on the sand-bars of the great western lakes, being frequent in those of Erie, Huron and Superior. In short, no bird is more common along the sea coasts, and lakes, of the whole northern hemisphere, within the limits of cool or moderate temperature.



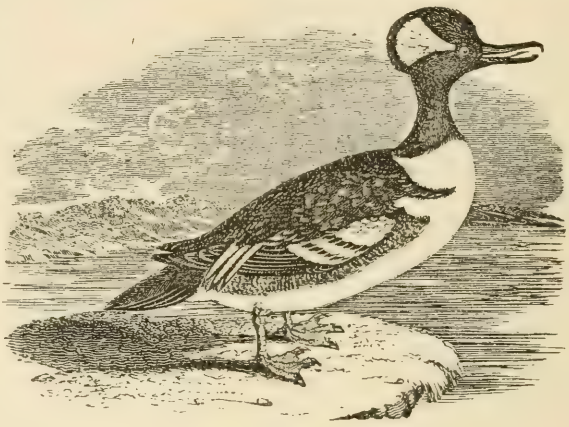
GREAT TERN.

The Great Tern arrives on the coast of New Jersey about the middle of April, and soon after they are seen on the shores of New England, where they are known by the name of the Mackerel Gull, appearing, with the approach of that fish, towards the places of their summer residence. In New York it is dignified, for the same reason, with the appellation of the Sheep's-Head Gull, prognosticating also, the arrival of that dainty fish in the waters of the State. About the middle of May, still gregarious as they arrive, they commence with the cares of reproduction. Artless in contrivance, the Terns remedy the defect of a nest, by selecting for their eyries, insulated sand-bars, wide beaches, but most commonly desolate, bare, and small rocky islets, difficult of access, and rarely visited by any thing but themselves and birds of similar habits. A small hollow scratch on the surface of the shelving rock, with the aid of a little sand or gravel merely sufficient to prevent the eggs from rolling off, are all the preparations employed by these social and slovenly birds.

in Guiana, Cayenne, and Surinam. The East India species is probably distinct. The *R. fulva* of Guiana, described by Linnæus, differs from the present in having those parts fulvous which in this are black; their general appearance and habits are however the same.

THE HOODED MERGANSER.

This elegant species is peculiar to North America, and inhabits the interior and northern parts of the fur countries to their utmost limits. It is also among the latest of the Anatidæ to quit those cold and desolate regions. It makes a nest of withered grass and feathers in retired and unfrequented places, by the grassy borders of rivers and lakes. According to Audubon, it also breeds around the lagoons of the Ohio, and on the great North-Western Lakes of the interior. On the river St. Peters, in the 45th parallel, Mr. Say observed them on the 18th of July no doubt in the same place where they had passed the rest of the summer. At Hudson's Bay, where they arrive about the end of May, they are said to nest close to the borders of lakes and lay six white eggs. The young are at first yellowish and begin to fly in July. The Hairy Head, as this species is sometimes called, is rarely seen but in fresh waters and lakes, approaching the sea only in winter, when its favorite haunts are blocked up with ice. It delights in the woody interior, and traces its way up still creeks, and sometimes visits the mill ponds, perpetually diving for small fish and insects in the manner of the Red-breasted Merganser. In the course of the winter they migrate as far south as Mexico, are very common throughout the whole winter in the Mississippi, and are rendered very conspicuous by the high circular and parti-colored crest which so gracefully crowns the top of the head.



HOODED MERGANSER.

FISHES.

APODAL FISH.

OF THE EEL TRIBE IN GENERAL.

THE Apodal Fish, of which the Eel forms the first Linnean tribe, in their appearance and manners, approach, in some instances, very nearly to the serpents. They have a smooth and slippery skin, and are in general naked, or covered only with small, soft, and distant scales. Their bodies are long and slender, and they are supposed to live entirely on animal substances.

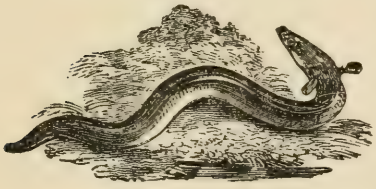


GROUP OF FISHES.

There are about nine species, most of which are found only in the seas. One of these frequents our fresh waters, and three others occasionally visit our shores.

THE COMMON EEL.

The Common Eel evidently forms a connecting link, in the chain of nature, between the serpents and the fishes. It possesses not only the serpent form, but also many of the habits of serpents.



COMMON EEL.

The Eel is frequently known to quit its own element, and to wander, in the evening or night, over meadows, in search of snails and other prey, or to other ponds for change of habitation. This will account for Eels being found in waters that have not been suspected to contain them.

The usual haunts of Eels are in mud, among weeds, under the roots or stumps of trees or in holes in the banks or the bottom of rivers. They are partial to still waters, and particularly to such as

are muddy at the bottom. Here they often grow to an enormous size, sometimes weighing fifteen or sixteen pounds.

When kept in ponds, these fish had been known to destroy young ducks. Eels seldom come out of their hiding-places except in the night, during which time they are caught with lines that have several baited hooks. In winter they bury themselves deep in the mud, and, like the serpent tribe, remain in a state of torpor. They are so impatient of cold, as eagerly to take shelter even in a wisp of straw, if flung into a pond in severe weather; and this has sometimes been practised as a mode of catching them.

Eels are viviparous, or produce living offspring. They are so tenacious of life, that their parts will continue to move for a considerable time after they are skinned and cut into pieces: and no other fish whatever will live so long out of water as these. They are best in season from May to July; but they may be caught with a line till September. When the water is thick with rains, they may be fished for during the whole day; but the largest and best are caught by night-lines.

THE CONGER EEL.

When at its full size, the Conger Eel has sometimes been known to measure more than ten feet in length, and from fourteen to sixteen inches in circumference. It is one of the most dangerous and most powerful enemies with which the fishermen of the British Islands have to contend. Being usually caught by a hook and line, it requires some care to land and kill the large ones without injury. We are informed, that on such occasions they have been known to entwine themselves round the legs of a fisherman, and to fight with the utmost fury. A Conger, six feet in length, was caught in the Wash at Yarmouth, in April, 1808; but not until after a severe contest with the man who had seized it. The animal is stated to have risen half erect, and to have actually knocked the fisherman down before he could secure it. This Conger weighed only about sixty pounds; but some of the largest exceed even a hundred weight.



CONGER EEL.

The voracity of these fish is enormously great. They often lie concealed, in the mud or sand, at the mouths of large rivers, for the purpose of seizing upon any prey which passes either in or out. If

this happen to be so large as not otherwise to be immediately overcome, we are told that the Conger will coil its body round, and thus prevent its escape; whilst in the mean time, it kills it by means of its teeth. It devours great quantities of the different species of Cuttle-fish, and other soft marine animals, which have not sufficient agility or address to escape from its pursuit.



WOLF-FISH.

Until the Congers are grown to a size so large that they are able stoutly to defend themselves, they are liable to attack from numerous foes. The Wolf-fish, all the larger species of Rays, and even the sea Craw-fish, and Lobsters, destroy them in vast numbers.

During the winter months, it is said that these fish conceal themselves deep in the mud; and that, so long as the cold weather lasts, they seldom come forth from their retreats.

OF THE GYMNOTUS TRIBE IN GENERAL.

Some of the species of Gymnotus inhabit the fresh waters, and others live in the ocean. They are all, except three, confined to America.

THE ELECTRICAL GYMNOTUS, OR EEL.

These fishes possess the singular property of giving a shock, (similar in its effects to that produced from a charged jar,) to any body, or any number of bodies connected together.



GYMNOTUS.

On touching an Electrical Eel with one hand, a sensation is experienced similar to that arising from touching the conductor of an electrical machine: with a short iron rod the same was felt, but less powerfully. While another person provoked the fish, Dr. Williamson put his hand into the water at the distance of three feet from it, and felt an unpleasant sensation in the joints of his fingers. Some small fish were thrown into the water, and the animal immediately stunned and swallowed them. A larger fish was thrown in, which he stunned likewise and attempted to swallow; but, from its size, he could not do so Dr. Williamson put his hand into the water, and had another



ELECTRIC EEL FISHING.

fish thrown in at some distance. The Eel swam up to it, and at first turned away without offering it any violence: after a little time he returned, and, looking steadfastly at it for a few seconds, gave it a shock, by which it instantly turned upon its back, and became motionless. Dr. Williamson at that very instant felt the same sensation in his fingers, as he had done when he put his hand into the water before. A fish was afterwards struck, but not quite killed. When the Electrical Eel perceived this, he returned, and at a second shock, evidently more severe than the former, rendered it motionless. On touching the Eel with one hand so as to provoke it, and holding the other in the water at a little distance, a severe shock was felt through both the arms and across the breast, similar to that from a charged jar. Eight or ten persons, with their hands joined, experienced the same, on the first touching the head, and the last the tail of the fish. A dog being made a link in this chain, uttered a loud yell at the instant of contact. When the Eel was touched with silk, glass, or any other non-conductor, no shock was felt. From a long series of experiments, it appeared to Dr. Williamson that these properties partook so nearly of the nature of electricity, that whatever would convey the electrical fluid, would also convey the fluid discharged by the Eel; and *vice versa*. He, however, was not able to observe that any spark was produced on contact. This mode of defence the fish never adopted except it was irritated; and Dr. Williamson has passed his hand along the back and sides from head to tail, and has even lifted part of its body out of the water, without exciting it to injure him.

Mr. Bryant mentions an instance of the shock from one of these fish being felt through a considerable thickness of wood. One morning, while he was standing by, as a servant was emptying a tub, in which an Electrical Eel was contained, he had lifted it entirely from the ground, and was pouring off the water to renew it, when he received a shock so violent as occasioned him to let the tub fall. Mr. B. then called another person to his assistance, and caused them together to lift up the tub, each laying hold only on the outside. When they were pouring off the remainder of the water, they each received a shock so smart, that they were compelled to desist.

Persons have been knocked down with the stroke. One of these fish having been shaken from a net upon the grass, an English sailor, notwithstanding all the persuasions that were used to prevent him, would insist on taking it up; but the moment he grasped it, he dropped down in a fit; his eyes were fixed; his face became livid; and it was not without difficulty that his senses were restored. He said, that the instant he touched it, "the cold ran swiftly up his arm into his body, and pierced him to the heart."

This property seems principally of use to the Electrical Eels in securing their food; for being destitute of teeth, they would otherwise be scarcely able to seize it. The force of the shock has been satisfactorily proved to depend entirely on the will, and to be exerted as circumstances require. The prey of these fish are generally so stunned by the shock, as to appear dead: but when these have been taken

into another vessel, they have been always found to recover. When the Electrical Eels are hungry, they are tolerably keen in pursuit of their food; but they are soon satisfied, not being able to devour much at one time. An Electrical Eel, upwards of three feet in length, could not swallow a fish more then three, or at most three inches and a half long.

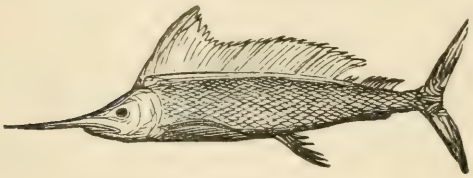
The organs which produce this wonderful accumulation of electric matter, constitute nearly one-half of that part of the flesh in which they are placed, and, perhaps, compose more than one-third of the whole animal. There are two pairs of these organs, one on each side. Their structure is very simple and regular, consisting only of flat partitions, with cross divisions between them. The partitions are thin membranes placed nearly parallel to one another, and of different lengths and breadths.

OF THE SWORD-FISHES IN GENERAL.

THESE are very large and powerful animals, often growing to the length of twenty feet and upwards. Their voracity is unbounded, for they attack and destroy almost every living thing that comes in their way. The larger fish they penetrate with their long, hard, and sword-shaped upper jaw. There are two species, one only of which is found in the European seas.

THE BROAD-FINNED, AND THE EUROPEAN SWORD-FISH.

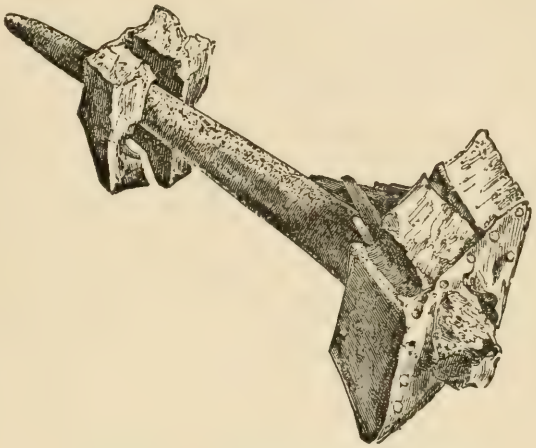
The former of these inhabit the Brazilian and East Indian Seas, and also the Northern Ocean. They frequently grow to the length of twenty feet or upwards, and are very powerful fish.



BROAD-FINNED SWORD-FISH.

When his majesty's ship Leopard, after her return from the coast of Guinea and the West Indies, was ordered, in 1725, to be cleaned and refitted for the Channel service, in stripping off her sheathing the shipwrights found in her bottom, pointing in a direction from the stern towards the head, part of the sword or snout of one of these fishes. On the outside, this was rough, not unlike seal-skin, and the end, where it was broken off, appeared like a coarse kind of ivory. The fish, from the direction in which the sword lay, is supposed to have followed the ship when under sail. The weapon had penetrated through the sheathing which was an inch thick; and passed through three inches of plank, and beyond that, four inches and a half into the timber. The force requisite to effect this must have been excessively great, especially as no shock was felt by the persons on board. The workmen declared

that it would be impossible, with a hammer of a quarter of a hundred weight, to drive an iron pin of the same form and size into that wood, and to the same depth, by less than eight or nine strokes, whilst this had been effected by only one.



SWORD OF SWORD-FISH, PIERCING TIMBER.

And about sixteen years ago, a letter was written to Sir Joseph Banks, as president of the Royal Society, from the captain of an East Indiaman, and was accompanied by an account of another instance of the amazing strength which this fish occasionally exerts. The bottom of this ship had been pierced through in such a manner, that the sword was completely imbedded, or driven through its whole length, and the fish killed by the violence of the effort.

The Sword-fishes and the Whale are said never to meet without coming to battle; and the former has the reputation of being always the aggressor. Sometimes two Sword-fishes join against one Whale; in which case the combat is by no means equal. The Whale uses his tail only in his defence: he dives down into the water, head foremost, and makes such a blow with his tail, that, if it take effect, finishes the Sword-fish at a stroke: but the other, which in general is sufficiently adroit to avoid it, immediately falls upon the Whale, and buries his weapon in his sides. When the Whale discovers the Sword-fish darting upon him, he dives to the bottom, but is closely pursued by his antagonist, who compels him again to rise to the surface. The battle then begins afresh, and lasts until the Sword fish loses sight of the Whale, who is at length compelled to swim off, which his superior agility enables him to do. In the Sword-fish piercing the Whale's body with the tremendous weapon at his snout, he seldom does any great damage to the animal, from not being able to penetrate much beyond the blubber.

The *European Sword-fish* has sometimes been found on the British coasts; and is very common in the Mediterranean.



EUROPEAN SWORD-FISH.

JUGULAR FISH.

OF THE COD TRIBE IN GENERAL.

This is a numerous tribe, the animals of which inhabit only the depths of the ocean, and seldom visit the fresh waters. They are in general gregarious, and feed on the smaller fish and other marine animals. The flesh of most of them is white, firm, and good eating.

THE COMMON COD.



COMMON COD.

These fish are on y found in the seas of the northern parts of the world; and the great rendezvous for them are the sand-banks of Newfoundland, Nova Scotia, and New England. These shallows are their favorite situations; for here they are able to obtain great quantities of worms, a food that is peculiarly grateful to them. Another cause of their attachment to these places is their vicinity to the polar seas where they return to spawn. There they deposit their roes in full security, and afterwards repair, as soon as the first more southern seas are open, to the banks for subsistence. Few are taken north of Iceland, and the shoals never reach so far south as the Straits of Gibraltar.

The vessels frequenting these fisheries, are from a hundred to two hundred tons burthen, and will catch thirty thousand Cod or upwards each. The hook and the line are the only implements employed in taking the fish; and this in a depth of water from sixteen to sixty fathoms. The great bank of Newfoundland, is represented to be like a vast mountain, above five hundred miles long, and nearly three hundred broad; and the number of British seamen employed upon it, is supposed to be about fifteen thousand.

The best season for fishing, is from the beginning of February, to the end of April; and though each man takes no more than one fish at a time, an expert fisherman will sometimes catch four hundred in a day. The employment is excessively fatiguing, from the weight of the fish, and the great coldness of the climate.

As soon as the Cod are caught, their heads are cut off; they are opened, gutted, and salted: they are then stowed in the hold of the vessel, in beds five or six yards square, head to tail, with a layer of salt to each layer of fish. When they have lain here three or four days to drain off the water, they are shifted into a different part of the vessel, and again salted. Here they remain till the vessel is

loaded. Sometimes they are cut into thick pieces, and packed in barrels, for the greater convenience of carriage.

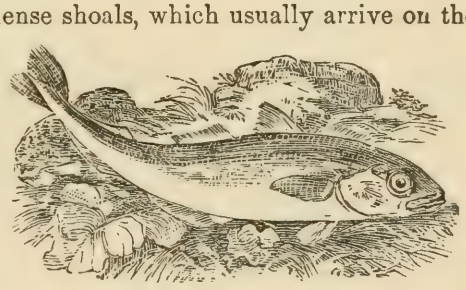
In the Newfoundland fishery, the *sounds*, or air-bladders, are taken out previously to incipient putrefaction, are washed from their slime and salted for exportation. The tongues are also cured, and brought in barrels containing four or five hundred pounds weight each. From the livers a great quantity of oil is extracted.

Cod feed principally on the smaller species of fish, on worms shell-fish, and crabs: and their digestion is sufficiently powerful to dissolve the greatest part even of the shells which they swallow.

They are so extremely prolific, that Leuwenhoek counted more than nine millions of eggs in the roe of a middling-sized Cod-fish. The production of so great a number will surely baffle all the efforts of man, or the voracity of the inhabitants of the ocean, to diminish the species so greatly, as to prevent its affording an inexhaustible supply of grateful provision in all ages.

THE HADDOCK.

Haddocks migrate in immense shoals, which usually arrive on the Yorkshire coasts about the middle of winter. These shoals are sometimes known to extend, from the shore, nearly three miles in breadth, and in length from Flamborough Head to Tinmouth Castle, fifty miles, and perhaps even much further. An idea of the number of Haddocks may be formed from the following circumstance: three fishermen, within a mile of the harbor of Scarborough, frequently loaded their boat with these fish twice a day, taking each time about a ton weight of them. The large Haddocks quit the coast as soon as they are out of season, and leave behind them great abundance of small ones. The former are supposed to visit the coasts of Hamburgh and Jutland during the summer.



HADDOCK.

THE WHITING.

It is principally near the bottom of the sea, that the Whiting resides. Here it feeds on various species of Crabs and Lobsters, on molluscæ, and young fish. In its stomach there are often found both Sprats and young Herrings. With these the fishermen frequently bait their hooks for the catching of Whitings: they also occasionally bait with marine Worms and Muscles.

Whitings are generally caught off certain parts of the French

coast, in the months of January and February; but, in Holland and England, during the summer season. They sometimes approach the English coasts in such numbers, that their shoals have been known occasionally to extend three or four miles in length, and upwards of a mile in breadth.

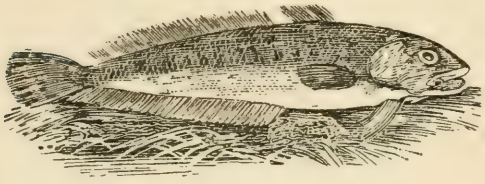


WHITING.

They are sometimes caught by means of nets, but lines are generally preferred. Where a fishery is well conducted, these lines are of immense length, and furnished with as many as from a hundred and fifty to two hundred hooks. One vessel will put out twenty of these lines, having in the whole nearly four thousand hooks. Whitings pursue the shoals of Herrings with great eagerness; they are, consequently, often caught in the Herring-nets.

THE LING, AND HAKE.

After the Herring, the Pilchard, and the Cod, the Ling may, in a commercial view, be considered as the most important of all fish. Nine hundred thousand pounds weight of Ling are annually exported from Norway. In England these fish are caught and cured in somewhat the same manner as Cod. Those which are caught off the shores of America, are by no means so much esteemed as those which frequent the coasts of Great Britain and Norway.



THE LING.

They are in season from February till about the end of May. During this time the liver is white, and yields a great quantity of fine and well-flavored oil. A kind of isinglass is made from the air-bladders. The tongues are eaten either fresh, dried, or salted.

Hake are found in the Mediterranean, in the British Channel, and in the North Sea. On some of the shores of Ireland, particularly those of Galway and Waterford, they are very abundant. They are also caught in vast quantities near Penzance in Cornwall, and on some parts of the coast of Devonshire.

There are few animals more voracious than these. They pursue, with great eagerness, the shoals of Herrings and Mackerel; and, when other prey is not easily had, they attack and devour even their own species. The Burbot is of the same family. It weighs about two pounds on an average, and its flesh is excellent; the largest specimens run to seven or eight pounds weight. It is fond of lurking in holes, or under large stones where it watches for its prey. Its general colour is yellowish brown, marbled with a darker tint, and its surface is slimy. It has been

introduced into the Lake of Geneva and might be placed advantageously for culture in many other waters. To this family also belong the Bib and Pout, the Poor, the Coal Fish and the Pollock.

THORACIC FISH.

OF THE SUCKING-FISH TRIBE.

THE Sucking-fishes have a naked, flat, and oily head, surrounded by a narrow margin, and marked with several transverse streaks or grooves. They have also ten rays in their gill-membrane; and their body is destitute of scales.

There are only three known species; these are occasionally seen in the Mediterranean Sea, and the Pacific Ocean.

THE COMMON REMORA, OR SUCKING-FISH.

From the time of Aristotle to the present day, this fish has been an object of constant attention and surprise. The ancient naturalists, not satisfied with imputing to it wonderful qualities, and very extraordinary powers, proceeded so far as even to regard its properties among what they denominated the occult qualities of nature. The Remora, in almost all ages, has ranked high in the writings of poets, in the comparisons of orators, the narrations of travellers, and the descriptions of naturalists.



COMMON REMORA.

The ancients absurdly believed that, small as it is, this fish had the power of arresting the progress of a ship in its fastest sailing, by adhering to its bottom.

It inhabits most parts of the ocean, and is often found so strongly adhering to the sides of Sharks and other fish, by means of the process on the upper part of its head, as not to be separated without great difficulty. Five of these fish have been taken off the body of a single Shark. St. Pierre says, he has put some of them on an even surface of glass, from which he could not afterwards remove them.

The Indians of Jamaica and Cuba formerly used the Sucking-fish in the catching of others, somewhat in the same manner as Hawks are employed by a falconer in seizing birds. They kept them for the purpose, and had them regularly fed. The owner, on a calm morning, would carry one of them out to sea, secured to his canoe, by a slender but strong line, many fathoms in length; and the moment the creature saw a fish in the water, though at a great distance, it would dart away with the swiftness of an arrow, and soon fasten upon it. The Indian

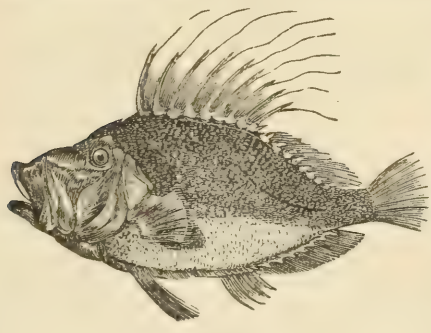
in the mean time, loosened and let go the line, which was furnished with a buoy that floated on the surface of the ocean, and marked the course the Sucking-fish had taken; and he pursued it in his canoe, until he perceived his game to be nearly exhausted. He, then, taking up the buoy, gradually drew the line towards the shore; the Sucking fish still adhering with so inflexible a tenacity to his prey as not easily to be removed.

OF THE DOREE TRIBE.

None of the fishes of the present tribe were known to the ancient naturalists, except the Common Dorée. There are about eight species, some of which are found in the European, and others in the American seas. One of them, which inhabits the fresh waters of India, swims near the surface, like the beaked Chætodon, and catches aquatic insects, by jetting water upon them from its mouth. The wings of the insects are by this means wetted, and they become an easy prey.

THE COMMON, OR JOHN DORÉE.

The ancients were well acquainted with the John Dorée: it is expressly mentioned in the writings both of Ovid and Pliny. This fish, and not the Haddock, is, by many persons, supposed to have been the same out of the mouth of which the apostle Peter, at the command of our Saviour, took the tribute-money. The indication of this is stated to be a dark spot, somewhat like a finger mark, on each side of the head.



JOHN DOREE.

The Dorée is a very voracious animal: it feeds on various species of small fish, which it pursues with great rapidity. It will seize, and almost without discrimination, all kinds of baits. The audaciousness of the Dorée ought not to surprise us, when we consider that, independently of the enormous dimensions of its mouth, and the number and strength of its teeth, it has a longitudinal range of strong spines, not only on each side of the dorsal fins, but likewise from the mouth all the way to the second anal fin. These tend to protect it from injury by its enemies of the deep.

When the Dorée is taken alive out of the water, it is able to compress its internal organs so rapidly, that the air, in rushing through the openings of the gills, produces a kind of noise somewhat like that which, on similar occasions, is emitted by the Gurnards.

The Dorée is found in the North Sea, in the British Channel, the

Mediterranean, and the Atlantic Ocean. As its form indicates the Dorée is by no means rapid in its movements; it wanders leisurely through the deep waters, often drifting with the current, though it can, doubtless, exert itself vigorously enough when prompted by its appetite. It is said to follow the shoals of Pilchards on which it preys; it also devours small Cuttle-fish. It is taken principally in Autumn and Winter.

OF THE FLAT-FISH IN GENERAL.

THE present tribe comprehends those fish that are usually denominated Flat-fish; such as the Turbot, Plaise, Flounder, Sole, &c. These are generally confined to the muddy or sandy banks of the sea, where they have the power of burying themselves, as far as the head, for the purpose of escaping the devastations, of the more rapacious tribes. They seldom rise far from the bottom, since, from the want of an air-bladder to buoy them up, which most of the other fishes possess, they are compelled to use their pectoral fins for this purpose, in somewhat the same manner as birds use their wings to rise in the air; and this is not done without considerable exertion. Here, therefore, they generally swim, with their bodies in an oblique position, and feed on such aquatic animals as come in their way.

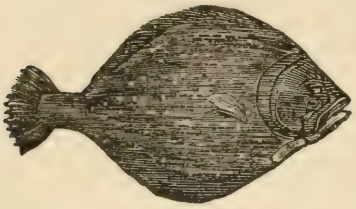
Many of them as the Holibut, Turbot, and some others, grow to a large size. The eyes of the whole tribe are situated on one side of the head. It is a curious circumstance, that, while the under parts of their body are of a brilliant white, the upper parts are so colored and speckled, as, when they were half immersed, in the sand or mud, to render them almost imperceptible. Of this resemblance they are so conscious, that whenever they find themselves in danger, they sink into the mud, and there continue motionless. This is a circumstance so well known to fishermen, that within their palings on the strand they are often under the necessity, of tracing furrows with a kind of iron sickle in order to direct by the touch, what they are not otherwise able to distinguish. Not being rapacious, nor furnished with any weapons of defence, these fishes owe their security to this stratagem; while the Thornback and Rays, which are carnivorous, and armed with strong spines, although Flat-fish of a different class, are marbled with lighter colors, that they may be perceived and avoided by less powerful fish.

THE TURBOT, AND HOLIBUT.

The northern parts of the English coast, and some places off the coast of Holland, afford Turbots in greater abundance, and in greater excellence, than any other parts of the world. Lying here, however, in deep waters, they are seldom to be caught but by lines.

In fishing for Turbot off the Yorkshire coast, three men go out in each of the boats, each man furnished with three lines, and every line having two hundred and eighty hooks, placed exactly six feet two inches asunder. These are coiled on an oblong piece of wicker-work, with the hooks baited and placed very regularly in the centre of the

coil. When they are used, the nine lines are generally fastened together, so as to form one line, with above two thousand hooks, and extending nearly three miles in length. This is always laid across the current; and an anchor and buoy are fixed at the end of each man's line. The tides run here so rapidly, that the fishermen can only shoot and haul their lines during the still water at the turn of the tide; and therefore, as it is flood and ebb about every alternate six hours, this is the longest time the lines remain on the ground. When the lines are laid, two of the men can usually wrap themselves in the sail and sleep, whilst the third is on watch, to prevent their being run down by ships, and to observe the weather.



TURBOT.

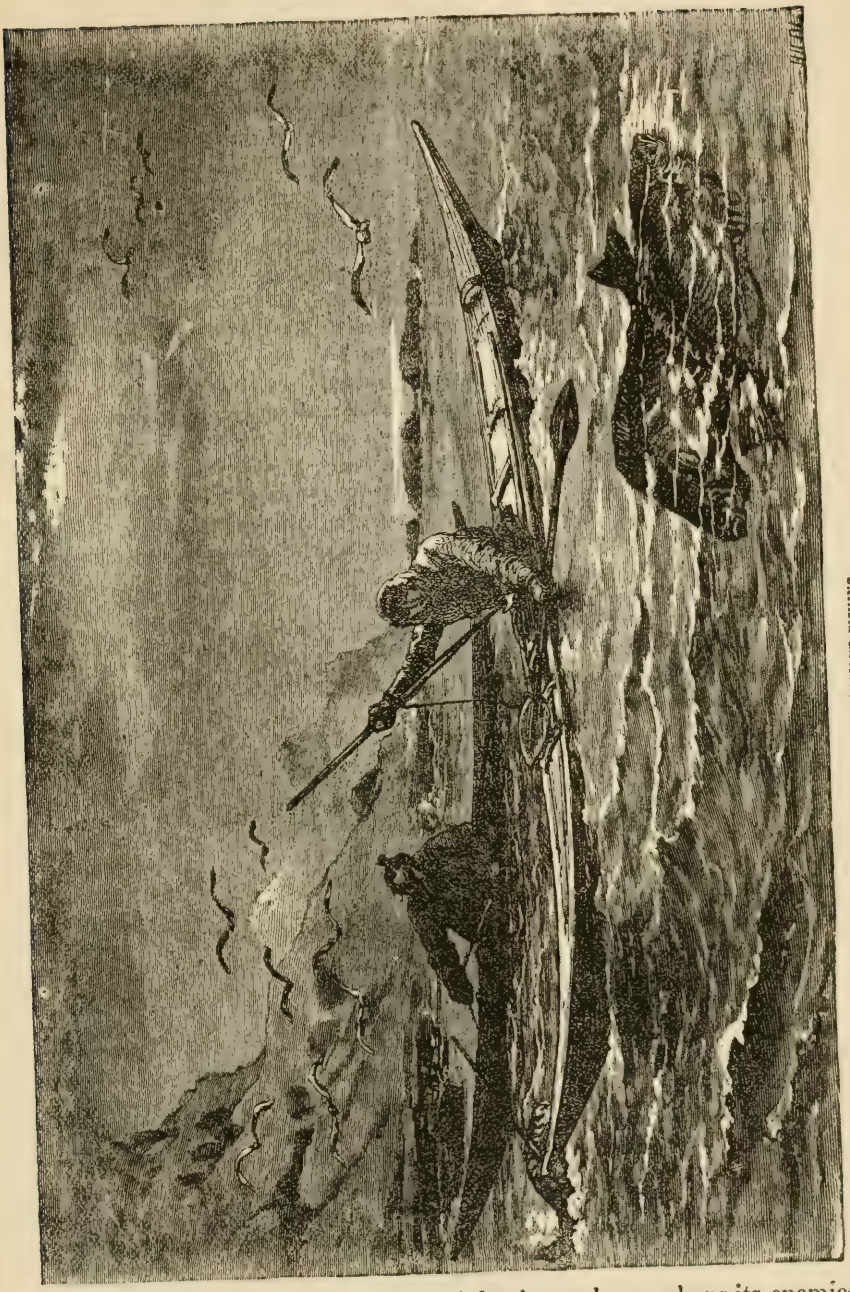
The bait that the Turbots take most readily is a fresh Herring, cut into proper-sized pieces: they are also partial to the smaller Lampreys, pieces of Haddock, Sand-worms, Muscles, and Limpets; and when none of these are to be had, the fishermen use Bullock's liver. The hooks are two inches and a half long in the shank, and nearly an inch wide between the shank and the point. These are fastened to the lines upon sneads of twisted Horse-hair, twenty-seven inches in length. The line is made of small cording, and is always tanned before it is used.

The voracity of Turbot, when in pursuit of prey, is often such, that it carries them into the mouths of rivers, or the entrance of ponds in salt-marshes, which communicate with the sea. But they are not contented with merely employing agility and strength in procuring their food, they likewise have recourse to stratagem. They plunge themselves into the mud or sand at the bottom of the sea, and cover their whole body, except their eyes and mouth. Thus concealed, they seize upon and devour all the smaller kinds of fish which incautiously approach them. It is said that they are very particular in the choice of their food, invariably refusing all except living animals, or such as are not in the least degree putrid. And the fishermen assert, that they are never to be caught with baits which have been bitten by other fish.

In many parts of England, Turbot and Holibut are sold indiscriminately for each other. They are, however, perfectly distinct; the upper parts of the former being marked with large, unequal, and obtuse tubercles; while those of the latter are quite smooth, and covered with oblong soft scales, that adhere firmly to the body. The eyes of the Turbot also are on the left, whilst those of the Holibut are on the right of the head.

Holibuts are sometimes caught of such immense size, on the northern coasts of England, as to weigh from two to three hundred pounds. Olafsen speaks of having seen one in Iceland, which measured five ells in length.

The Greenlanders employ the membrane of the stomach of the Holibut, in place of glass for their windows.

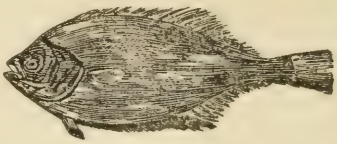


HOLIBUT FISHING.

The Turbot is most active in the night time, when perhaps its enemies are less vigilant; and in the day time it lies at the bottom with its dark side uppermost, and is consequently difficult to be distinguished. It is said that when apprehensive of danger it will remain perfectly still.

THE PLAISE AND FLOUNDER.

The general habits both of the Plaise and Flounder, resemble those of all the other flat-fish. These fish are each found in great abundance in most of the European seas. Flounders often ascend rivers, and occasionally even so far as to be beyond the immediate influence of the tides.



FLOUNDER.

OF THE CHÆTODON TRIBE.

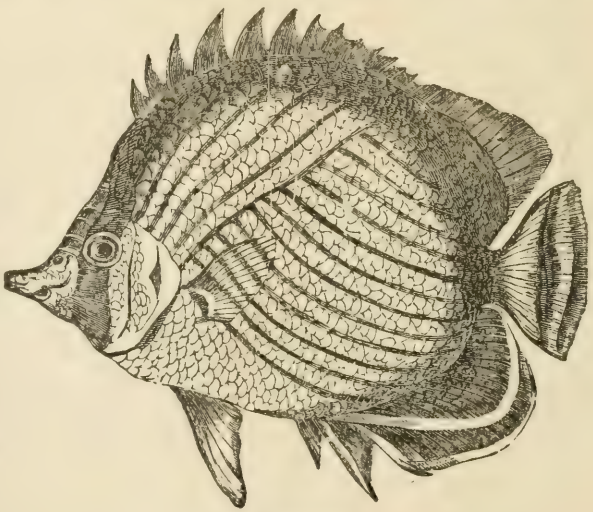
In this tribe, although the species are very numerous, there is only one of which I have met with any account in the least degree interesting.

The head and mouth of the Chætodons are small, and they have the power of pushing out and retracting the lips, so as to make a tubular orifice. The teeth are mostly bristle-shaped, flexible, moveable, closely set, and very numerous. The gill-membrane has from three to six rays. The body is scaly, broad, and compressed; and the dorsal and anal fins are generally terminated with prickles.

THE BEAKED CHÆTODON.

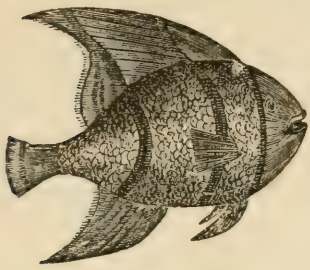
The Beaked Chætodon or Shooting-fish frequents the shores and mouths of rivers in India, and about the Indian islands. It is somewhat more than six inches in length.

This fish feeds principally on flies and other small winged insects that hover about the waters it inhabits; and the mode of taking its prey is very remarkable. When it sees a fly at a distance, on any of the plants in the shallow water, it approaches very



CHÆTODON.

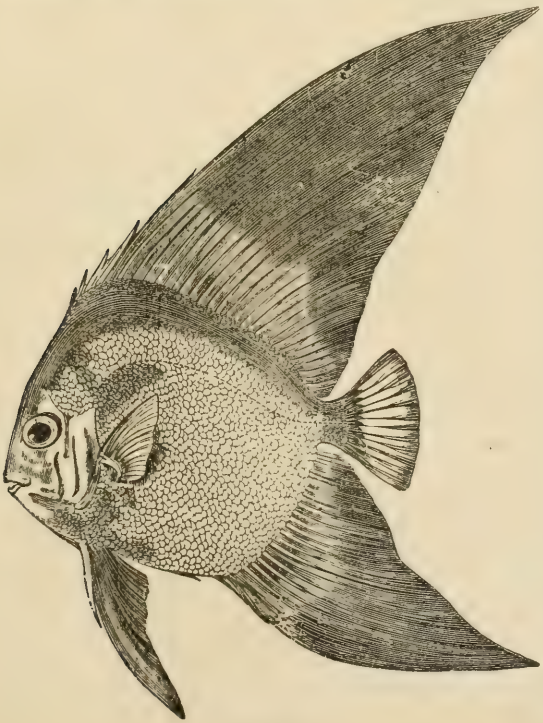
slowly, and with the utmost caution, coming as much as possible perpendicularly under the object. Then putting its body in an oblique direction, with the mouth and eyes near the surface, it remains for a moment immovable. Having fixed its eyes directly on the insect, it shoots at it a drop of water from its tubular snout, but without showing its mouth above the surface, from whence only the drop seems to rise. This is done with so much dexterity, that though at the distance of four, five, or six feet, it seldom fails to bring the fly into the water. With the closest attention the mouth could never be discovered above the surface, although the fish has been seen to eject several drops one after another, without leaving the place, or in the smallest apparent degree moving its body.



CHÆTODON.

This very singular action was reported to M. Hommel, the governor of the hospital at Batavia, near which place the species is sometimes found; and it so far excited his curiosity, that he was determined, if possible, to convince himself of its truth, by ocular demonstration.

For this purpose, he ordered a large, wide tub to be filled with sea-water: he then had some of these fish caught and put into it; and the water was changed every other day. After a while, they seemed reconciled to their confinement; and he tried the experiment. A slender stick, with a fly fastened at the end, was placed in such a manner on the side of the vessel, as to enable the fish to strike it; and it was not without inexpressible delight, that he daily saw them exercising their skill in shooting at it with amazing force and seldom missing their mark.



BAT CHÆTODON.

The flesh of this species is white and well tasted.

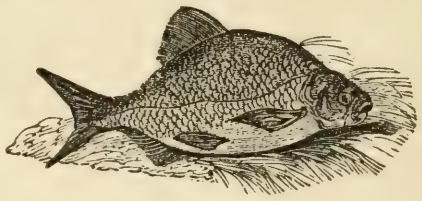
The Bat Chætodon found near Ceylon is a large species with very broad fins.

OF THE PERCH TRIBE.

Of about sixty known species of Perch, the ancients were acquainted only with three. The voracity of these fishes is boundless. They are also endowed with strong muscular powers of action, and with great activity of body. When seized in the hand, or attacked by an enemy, they erect the spines of their first dorsal fin, and strike them at the intruder with such force and address, as sometimes to cause dreadful lacerations.

THE COMMON PERCH.

The Common Perch are gregarious; and, contrary to the nature of nearly all fresh-water fish that swim in shoals, they are so voracious as to attack and devour even their own species. They grow slowly, and are seldom caught of extraordinary size.



COMMON PERCH.

Perch are found in clear, swift rivers, with pebbly or gravelly bottoms, and in those of a sandy or clayey soil. They seem to prefer moderately deep water, and holes by the sides of, or near to gentle streams, where there is an eddy; the hollows under banks, among weeds, and roots of trees; the piles of bridges or ditches, and back streams that have a communication with some river. They also thrive sufficiently well in ponds that are fed by a brook or rivulet. These fish are very tenacious of life. They have been known to survive a journey of near sixty miles, although packed in dry straw.

It is generally believed that a Pike will not attack a full grown Perch: he is deterred from so doing, by the spiny fins of its back, which this fish always erects at the approach of an enemy. The smaller Perch, however, are frequently used as bait for Pike.

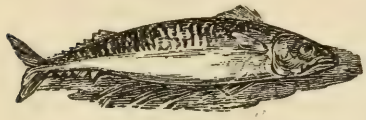
The season of angling for Perch, is from April to January; and the time from sunrise till ten o'clock, and from two o'clock till sunset: except in cloudy weather, with a ruffling south wind, when they will bite all day. The baits are various kinds of worms, a minnow, or grass hopper. So voracious are these fish, that it is said, if an expert angler find a shoal of them, he may catch every one. If, however, a single fish escape that has felt the hook, all is over; this fish becomes so restless, as soon to occasion the whole shoal to leave the place.

In winter the Perch is exceedingly abstemious, and during that season it scarcely ever takes a bait, except in the middle of a warm sunny day. In clear weather, during the spring, sometimes a dozen or more of these fish may be observed in a deep hole, sheltered by

trees and bushes. The angler may then observe them striving which shall first seize his bait, till the whole shoal are caught.

In one of the pools of Merionethshire there is a singular *variety* of the Perch, the back of which is hunched, and the lower part of the back-bone next the tail is strangely distorted. The common kind are as numerous in this pool as the deformed fish. Some of the crooked Perch have likewise been found in the small alpine lakes of Sweden

OF THE MACKEREL TRIBE.

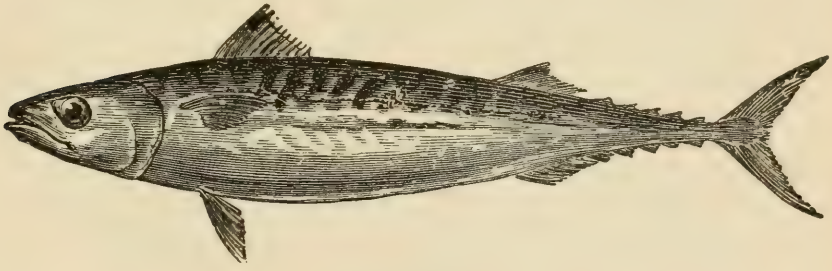


MACKEREL.

NEARLY all the species of Mackerel are gregarious, and unite in immense shoals. Some of them are migratory, making long voyages at certain seasons of the year. It is believed that they are all eatable: and some of them are well known to be exceedingly delicate food. They afford employment and support to numerous fishermen in various countries. There are in the whole about twenty-five species.

THE COMMON MACKEREL.

From the elegance of its shape, and the brilliancy of its colors the



COMMON MACKEREL.

Mackerel, when alive, is one of the most beautiful fish that frequents our coasts. Death, in some measure, impairs the colors, but it by no means obliterates them.

Mackerel visit our shores in vast shoals; but, from being very tender and unfit for long carriage, they are found less useful than other gregarious fish. In some places they are caught by lines from boats; for during a fresh gale of wind they readily seize a bait. The usual bait is a bit of red cloth or a piece of the tail of a Mackerel. It is necessary that the boat should be in motion, in order to drag the bait along near the surface of the water. The great fishery for Mackerel is in some parts of the west coast of England. This is of such an extent as to employ, in the whole, a capital of nearly two hundred thousand

pounds. The fishermen go out to the distance of several leagues from the shore, and stretch their nets, which are sometimes several miles in extent, across the tide, during the night. The meshes of these nets are just large enough to admit the heads of tolerably large fish, and to catch them by the gills. A single boat has been known to bring in, after one night's fishing, a cargo that has been sold for nearly seventy pounds. Besides these, there is, in the west of England, another mode of fishing for Mackerel with a *ground seine*. A coil of



MACKEREL BOATS.

rope, about two hundred fathoms in length, with the net fastened to one end, is tied, at the other, to a post or rock, on the shore. The boat is then rowed to the extremity of this coil, when a pole, fixed there, and leaded heavily at the bottom, is thrown overboard. The rowers, from this place, make as nearly as possible a semicircle, two men continually and regularly putting the net into the water. When they come to the other end of the net, where there is another leaded pole, they throw that overboard. Another coil of rope, similar to the first, is by degrees thrown into the water, as the boatmen make for the shore. The boat's crew now land, and, with the assistance of persons stationed there, haul in each end of the net till they come to

the two poles. The boat is then again pushed off towards the centre of the net, in order to prevent the more vigorous fish from leaping over the corks. By these means, three or four hundred fish are often caught at one haul.

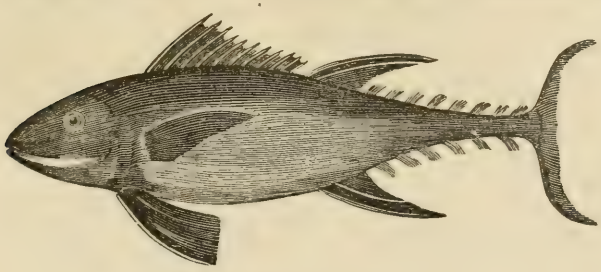
Mackerel are said to be fond of human flesh. Pontoppidan informs us, that a sailor, belonging to a ship lying in one of the harbors on the coast of Norway, went into the water to wash himself; when he was suddenly missed by his companions. In the course of a few minutes, however, he was seen on the surface, with vast numbers of these fish fastened on him. The people went in a boat to his assistance; and though, when they got him up, they forced with some difficulty the fishes from him, they found it was too late; for the poor fellow, very shortly afterwards, expired.

Their greatest weight seldom exceeds two pounds, though some have been seen that weighed more than five. Their voracity has scarcely any bounds; and when they get among a shoal of Herrings, they make such havoc as frequently to drive it away. They are very prolific, and deposit their spawn among the rocks near the shore, about the month of June. They die almost immediately after they are taken out of the water, and for a short time exhibit a phosphoric light.

In spring their eyes are covered with a white film, that grows in the winter, and is regularly cast at the beginning of summer. During this time they are said to be nearly blind.

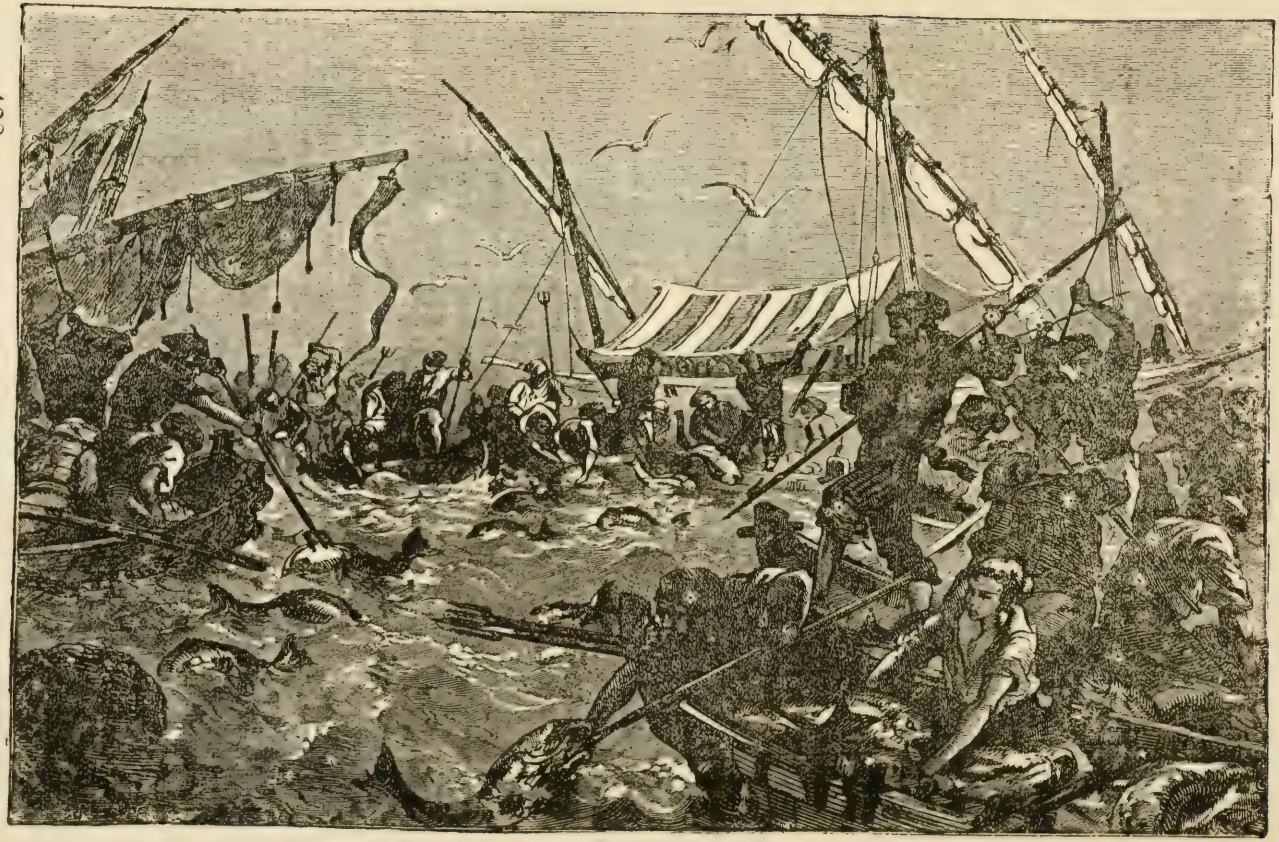
THE THUNNY.

On the coast of Sicily, as well as in several other parts of the Mediterranean, there are very considerable Thunny fisheries. The nets are spread over a large space of sea, by means of cables fastened to anchors, and they are divided into several compartments. A man, placed upon the summit of a rock high above the water, gives the signal of the fish being arrived; for he can discern from that elevation what passes under the water, much better than any person near the surface. As soon as notice is given that a shoal of fish has penetrated as far as the inner compartment of the net, the passage is drawn close, and the slaughter begins.



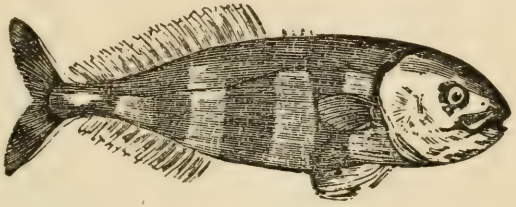
THUNNY.

Thunnies enter the Mediterranean about the vernal equinox, travelling in a triangular phalanx so as to cut the waters with its point, and to present an extensive base for the tides and currents to act against, and impel forwards.



THUNNY FISHING.

They repair to the warm seas of Greece to spawn, steering their course thither along the European shores; but as they return they approach the African coast: the young fry is placed in the van of the squadron as they travel. They come back from the east in May, and about that time, they abound on the coasts of Sicily and Calabria In autumn they steer northward, and frequent the neighborhood of Amalphi and Naples. They are not uncommon on the western coasts of Scotland, where they come in pursuit of the Herrings, and often, during the night, strike into the nets, and do considerable damage. When the fishermen draw these up in the morning, the Thunny rises at the same time towards the surface, ready to catch the fish that drop out. On the Thunny being observed, a line is thrown into the water, having a strong hook baited with a Herring, which it seldom fails to seize. As soon as the fish finds itself ensnared, it seems to lose all its active powers, and after very little resistance, submits to its fate.



THUNNY.

The quantity of these fish that is annually consumed in the two Sicilies, almost exceeds the bounds of calculation. When caught in May they are full of spawn, and are then esteemed unwholesome, as being apt to occasion headaches and vapors; to prevent these bad effects, the natives fry them in oil, and afterwards salt them. The pieces when fresh, appear exactly like raw beef; but when boiled they turn pale, and have somewhat the flavor of Salmon. The most delicate parts are those about the muzzle. Those fish which the inhabitants are not able to use immediately, are cut into slices, salted, and preserved in large tubs, either for sale or winter provisions.

The Thunny was a fish so well known to the ancients, as to form a principal article of their commerce. By the Romans it was held in great estimation.

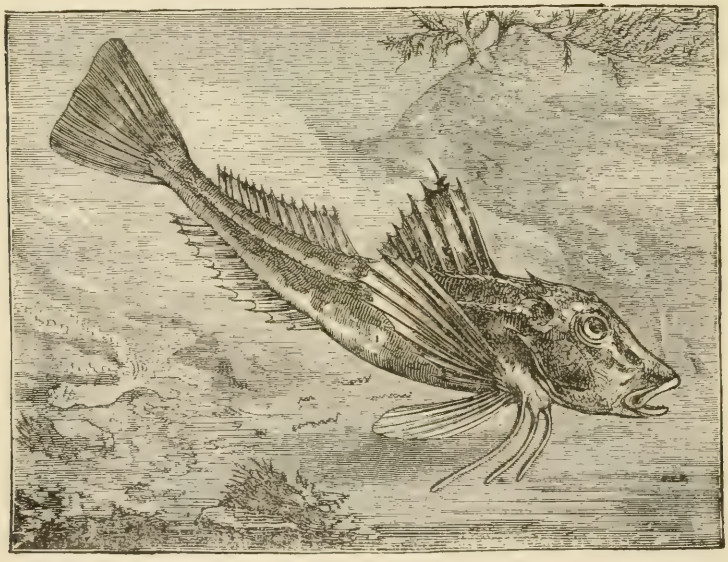
OF THE SURMULLETS IN GENERAL.

By the ancient Greeks and Romans, Surmullets were held in the highest esteem for the table. Pliny was acquainted with two species; and the principal distinction of habit that he has mentioned is, that one of them subsists on living animals, and the other on marine plants. This distinction, however, is by no means correct, since not only the mouth, but also the digestive organs, are precisely the same in each; consequently their food is necessarily the same also.

There are several species. They feed on other fish, on testaceous animals, Crabs and putrid bodies which they find floating in the ocean. None of them are known to inhabit fresh waters.

OF THE GURNARDS IN GENERAL.

These are carnivorous and predatory fish. They inhabit not only the North Sea and the Baltic, but are also found in the Mediterranean, and in various parts of the ocean. When taken alive out of the water, they erect their sharp dorsal fin, and attempt to inflict a wound by means of their spines. These are their weapons of defence against their enemies of the ocean. When taken up they compress their bodies, and, in expelling the air through their gills they make a singular kind of noise: hence the French have given to them the appellation of *Grondins*, or grumblers.



RED GURNARD.

THE GRAY GURNARD, AND RED GURNARD.

About the months of May and June the Gray Gurnards approach the seashores in considerable shoals, for the purpose of depositing their spawn upon the shallows. They are occasionally found on most of the shores of Great Britain and Ireland.

They chiefly reside in the depths of the ocean, where they have a plentiful supply of food, in Crabs, Lobsters, and Shell-fish, on which it is supposed they, for the most part feed.

Whilst it is in the water, the colors of the *Red Gurnard* are, almost beyond conception, brilliant and beautiful, particularly in the broad glare of sunshine, as they then vary, in the most pleasing manner, with every motion of the fish.

There are few of the residents of the ocean so voracious as this; for it devours, with eagerness, almost every thing eatable that comes in its way.

ABDOMINAL FISH.

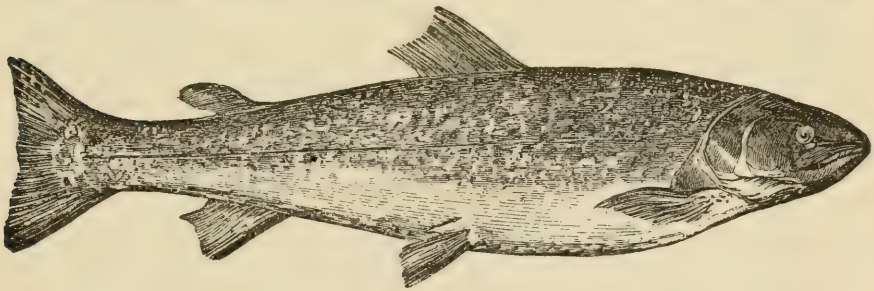
OF THE SALMON TRIBE.

THESE fish are distinguished from all others, by having two dorsal fins, of which the hindermost is fleshy and without rays. They have teeth both in the jaws and on the tongue; and the body is covered with round and minutely striated scales.

Rapid and stony rivers, where the water is free from mud, are the favorite places of most of the Salmon tribe. Some of them do indeed inhabit the sea; but they come up the rivers for the purpose of depositing their spawn in the beds of gravel; and in this instinctive pursuit they are able to surmount wonderful obstacles that oppose their course. After spawning, they return to the sea lean and emaciated. The whole tribe is supposed to afford wholesome food for mankind.

THE COMMON SALMON.

This fish seems, in a great measure, confined to the northern seas, being unknown in the Mediterranean, and in the waters of other warm



SALMON.

climates. It lives in fresh as well as in salt waters, forcing itself in autumn up the rivers, sometimes for hundreds of miles, for the purpose of depositing its spawn. In these peregrinations it is that Salmon are caught in the great numbers that supply our markets and tables. Intent only on the object of their journey, they spring up cataracts, and over other obstacles of very great height. This extraordinary power seems to be owing to a sudden jerk which the fish gives to its body, from a bent into a straight position.

Where the water is low, or where sand-banks intervene, they throw themselves on one side, and in that position soon work themselves over into the deep water beyond.

When the Salmon have arrived at a proper place for spawning in, the male and female unite in forming, in the sand or gravel, a proper receptacle for their ova, about eighteen inches deep: this they are also supposed afterwards to cover up. In this hole the ova lie until the ensuing spring, (if not displaced by the floods,) before they are hatched. The parents, however, immediately after their spawning and extremely emaciated, hasten to the salt water.



COLERAINE SALMON LEAP ON THE BAN.—ANGLING FOR SALMON.

When Salmon enter the fresh waters, they are always more or less infested with a kind of insect called the Salmon-louse; and when these are numerous, the fish are esteemed in high season. Soon after the Salmon have left the sea. the insects die and drop off.

Salmon become lean after the spawning-time, but they soon acquire their proper bulk when they return to the sea. Their food consists of the smaller fishes, insects, and worms; for all these are used with success as baits, by the anglers for Salmon.

The Scotch fisheries are very productive; as are also several of those in Ireland, particularly that at Cranna, on the river Ban, about a mile and a half from Coleraine. At this place, as many as three hundred and twenty tons of Salmon were taken in one year.

Salmon are cured by being split, rubbed with salt, and put in pickle, in tubs provided for the purpose, where they are kept about six weeks: they are then taken out, pressed, and packed in casks with layers of salt.

Different species of Salmon come in such abundance up the rivers of Kamtschatka, as to force the waters before them, and even to dam up the stream so as sometimes to make them overflow their banks. In this case, when the water finds a passage, such multitudes are left on the dry ground, as (if it were not for the violent winds which are prevalent in that country, assisted by the bears and dogs) would soon produce a stench sufficiently great to cause a pestilence.

Salmon are said to have an aversion to any thing red: hence the fishermen are generally careful not to wear jackets or caps of that color. Pontoppidan says also, that they have so great a dislike to carrion, that, if any happen to be thrown into the places where they are, they immediately forsake them.

THE SALMON, OR SEA TROUT.

Like the Salmon, this fish is an inhabitant of the sea, but in the months of November and December it enters the rivers, in order to deposit its ova; and, consequently, during the spawning season it is occasionally found in lakes and streams, at a great distance from the sea.



SALMON, OR SEA TROUT.

It feeds on aquatic insects, worms, and small fish, and is often caught by anglers, either with real or artificial flies.

The flesh of this Trout is red and of excellent flavor, but, like that of the Salmon, the goodness varies according to the quality of the water in which they are caught. On this also depends the greater or less brilliancy and beauty of their color. In muddy or putrid waters, they generally become insipid and unpalatable. These fish chiefly delight in large rivers, where the stream is rapid, and the bottom is either of sand or gravel.

THE COMMON, OR RIVER TROUT.

Though this is a delicate and excellent fish for the table, it was in no esteem among the ancients. It abounded in most of the lakes of the Roman empire, yet is only mentioned by writers on account of its beautiful colors.

In some rivers, Trouts begin to spawn in October; but November



TROUT FISHING.

is the chief month of spawning. About the end of September they quit the deep water, to which they had retired during the hot weather and make great efforts to gain the course of the currents, and seek out a proper place for depositing their ova. This is always done on a gravelly bottom, or where gravel and sand are mixed among stones, near the end or sides of streams. At this period they turn black about the head and body, and become soft and unwholesome. They are never good when they are full of roe: which is contrary to the nature of most other fish. After having spawned they become feeble, their bodies are wasted, and those beautiful spots, which before adorned them, are imperceptible. Their heads appear swelled, and their eyes are dull. In this state they seek still waters, and continue there sick, as it is supposed, all the winter. There are in all Trout-rivers some barren female fish, which continue good through the winter.



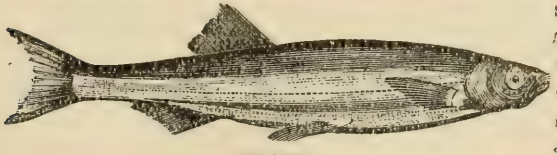
COMMON TROUT.

In March, or sometimes earlier, if the weather be mild, the Trouts begin to leave their winter quarters, and approach the shallows or tails of streams, where they cleanse and restore themselves. As they acquire strength they advance still higher up the rivers, till they fix on their summer residence, for which they generally choose an eddy behind a stone, a log, or bank, that projects into the water, and against which the current drives. They also frequently get into holes under roots of trees, or into deeps that are shaded by boughs and bushes.

These fish are said to be in season from March to September.

THE SMELT.

It is generally considered that the smell of this elegant little fish somewhat resembles that of cucumbers newly cut. From its very peculiar scent, so unlike that of any other species of fish we give to it the denomination of Smelt, or "smell it." The Germans call it *Stinckfisch*.

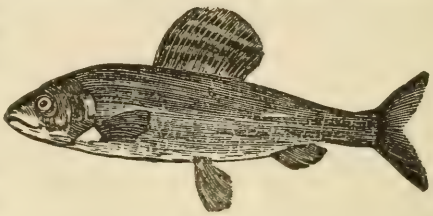


THE SMELT

The best season for these fish, is from December to May, when they approach the shores, and even ascend the rivers in immense shoals. Their usual season of spawning is about the months of March and April. In certain rivers, Smelts appear a long time before they spawn, and in others it has been remarked that they do not at all appear, so long as there is any snow-water floating down. After they have deposited their ova, they return to the sea, and they are not again found in the rivers until the ensuing season. In the Thames they are caught in great numbers from November to January.

THE UMBER, OR GRAYLING.

The ancient writers strongly recommend these fish as food for sick persons: they considered them to be peculiarly wholesome, and easy of digestion. To oil made from the fat of the Graylings, they attributed the property of obliterating the marks of small-pox, freckles, and other spots on the skin. The season of the year during which these fish are considered in greatest perfection, is from September to January.



GRAYLING.

Graylings delight chiefly in rapid streams, where they afford great amusement to the angler. They are very voracious, and rise eagerly to the Fly. They are bolder fish than Trout, and even if missed several times successively they will still pursue. So rapid are their motions in the water, that their name of Umber has been thence derived. Ausonius says of them,

"The Umber swift, escapes the quickest eye."

They feed principally on worms, insects, and water-snails; and the shells of the latter are often found in great quantity in their stomachs.

OF THE PIKE TRIBE.

It does not appear that more than three species of Pike were known to the ancients. The species at present known, are fifteen in number. They are all predatory fish, but few of them are so voracious as the Common Pike. They multiply fast, and increase rapidly in size. Their velocity in the water is very great, and their general muscular powers are beyond those of most other fish.

THE COMMON PIKE.

There is scarcely any fish of its size in the world, that in voracity can equal the Pike. One of these fish has been known to choke itself in attempting to swallow another of its own species, that proved too large a morsel: and it has been well authenticated, that in Lord Gower's canal at Trent-



COMMON PIKE.

ham, a Pike seized the head of a Swan as she was feeding under water, and gorged so much of it, as to kill them both.

A Pike was presented to Lord Cholmondeley, that was an ell long, and weighed thirty-five pounds. His Lordship directed it to be put into a canal in his garden, which at that time contained a great quantity of fish. Twelve months afterwards the water was drawn off, and it was discovered that the Pike had devoured all the fish except a large Carp, that weighed between nine and ten pounds; and even this had been bitten in several places. The Pike was again put in, and an entire fresh stock of fish for him to feed on: all these he devoured in less than a year. Several times he was observed by workmen who were standing near, to draw Ducks and other water-fowl under water. Crows were shot and thrown in, which he took in the presence of the men. From this time the slaughtermen had orders to feed him with the garbage of the slaughter-house; but, being afterwards neglected, he died, as it is supposed, from want of food.

Gesner relates, that a famished Pike, in the Rhone, seized the lips of a Mule, and was, in consequence, dragged out of the water; and that people, while washing their legs, had often been bitten by these voracious creatures.

The smaller fish exhibit the same fear of this tyrant, as many of the feathered tribe do of the rapacious birds; while lying dormant near the surface, they sometimes swim round him in vast numbers, and with great anxiety.

If the accounts of different writers on the subject are to be credited the longevity of the Pike is very remarkable. Gesner mentions a Pike, whose age was ascertained to be two hundred and sixty-seven years.

OF THE MULLET TRIBE.

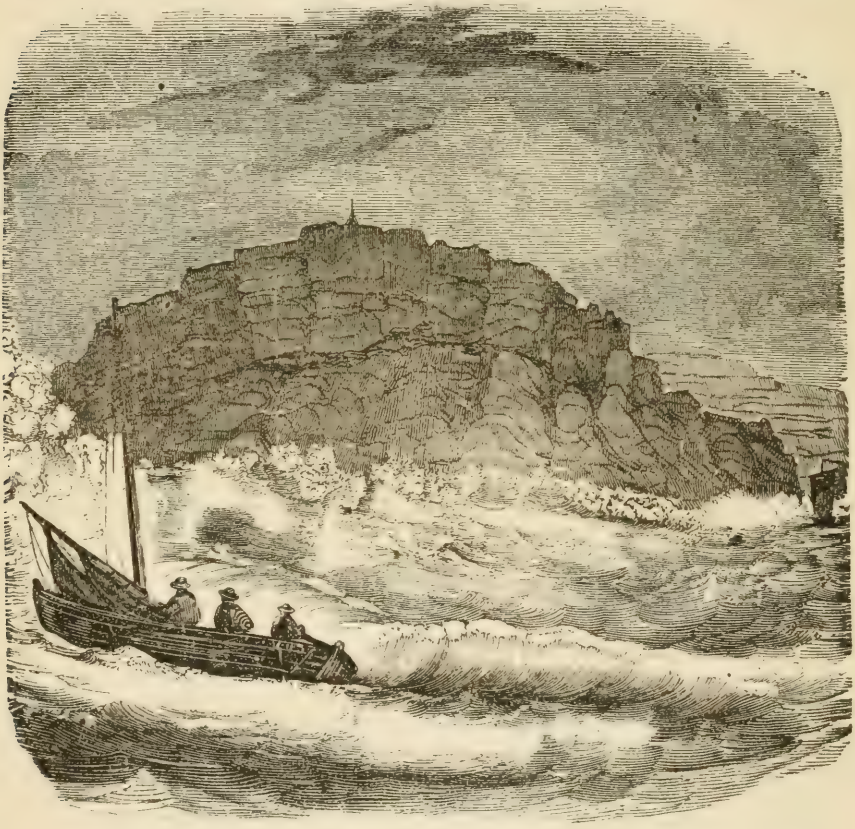
THE lips of these fish are membranaceous, and the lower lip is carinate inwards. They have no teeth in the jaws, but on the tongue and palate only. Above the angle of the mouth there is a hard callus. The gill-membrane has seven incurvated rays. The gill-covers are smooth and rounded.

THE WHITE, OR COMMON MULLET.

There are few parts of the globe which border upon the sea, where the White Mullet are not found. It is one of those species of fish, which, at certain seasons of the year, pass from the sea into the rivers. These they usually enter in the months of May, June, and July Fresh water is so little injurious to the Mullet, even for permanent residence, that it is said they may even be kept through the whole year, in lakes which have sandy bottoms.

They usually appear in immense shoals, and swim very near the surface of the water. When the fishermen observe an unusual

rippling in the water, and also perceive the water at a distance to have a peculiarly blue appearance, they know that a shoal of Mullet is there. The general mode in which these fish are caught, is by seine nets. In some parts of the continent, the fisherman endeavor, by making violent noises, to drive the fish into their nets; but they are so cunning, that, when surrounded by the net, the whole shoal will



FISHERMEN OFF ST. ABB'S HEAD.

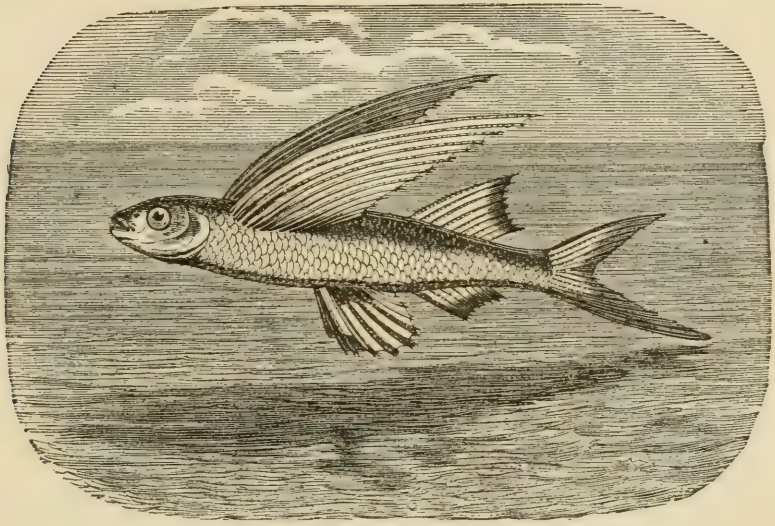
sometimes escape; for, if one of them spring over it, the rest, like Sheep, are sure to follow their leader.

Mullet are in considerable esteem for the table; and are in best season about the month of August. They are usually eaten boiled; and, on the continent, the most common sauce for them is oil and lemon-juice.

Mullets were often brought alive in glass vases to table, and a barbarous pleasure was derived from witnessing the changes of colour they underwent in expiring. Apicius invented a mode of suffocating the mullet in a kind of pickle; and Seneca endeavored to put an end to these practices, disgraceful to a people who stood first in civilization.

OF THE FLYING-FISH IN GENERAL.

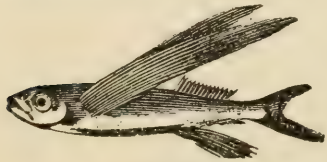
The head is covered with scales, and the mouth is destitute of teeth. These fish chiefly inhabit the seas of hot climates; but they are occasionally found within the temperate regions. There are only three known species.



FLYING FISH.

THE COMMON FLYING-FISH.

The Flying-fish has numerous enemies in its own element; the Dorado, the Thunny, and many others, pursue and devour it. To aid its escape, it is furnished with its long pectoral fins; and by means of these it is able to raise itself into the air, where it is often seized by the Albatross or tropic birds. Its flight is short, seldom more than sixty or seventy yards at a time, but, by touching the surface at intervals to moisten its fins, it is able to double or treble this distance. The whole flight, however, is of so short a duration, that even in the hottest weather, its fins do not become dry. By touching the water it not only wets its fins, but seems to take fresh force and vigor, for another spring into an element, where it is not long able to support its weight by the motion of its fins. If the Flying-fishes were solitary animals they would not be worth the pursuit of some of their larger enemies: they are seldom seen to rise singly from the water, but generally appear in large shoals.

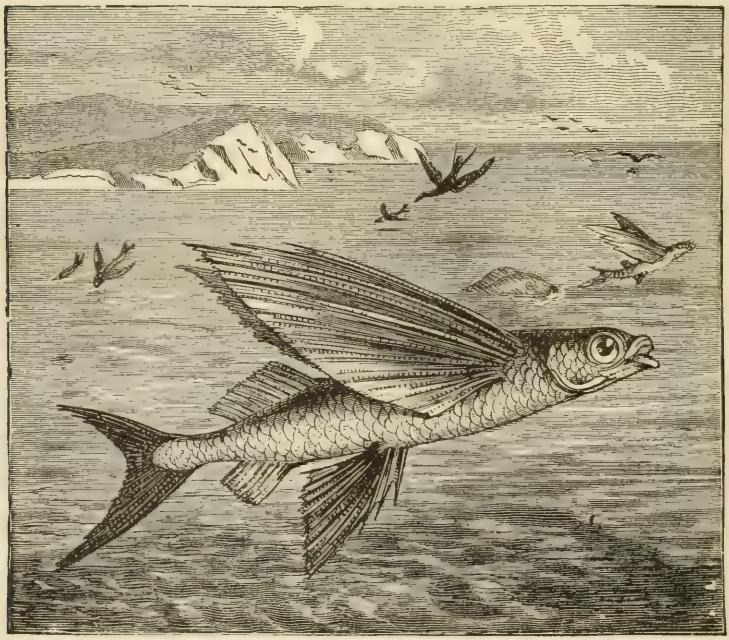


FLYING-FISH.

It has been inconsiderately remarked, that all "animated nature seems

combined against this little fish, which possesses the double powers of swimming and flying, only to subject it to greater dangers. If it escape its enemies of the deep, this is only that it may be devoured by the sea fowl, which are waiting its appearance in the air." Its destiny, however, is not peculiarly severe: we should consider that, as a fish, it often escapes the attack of birds; and, in its winged character, the individuals frequently throw themselves out of the power of fishes.

The eyes of these fish are so prominent, as to admit of their seeing danger from whatever quarter it may come; but, on emergency, they



BIRDS ATTACKING FLYING FISH.

are able, in addition, to push them somewhat beyond the sockets, so as considerably to enlarge their usual sphere of vision.

They are frequently either unable to direct their flight out of a straight line, or else they become exhausted on a sudden: for sometimes whole shoals of them fall on board the ships that navigate the seas of warm climates.

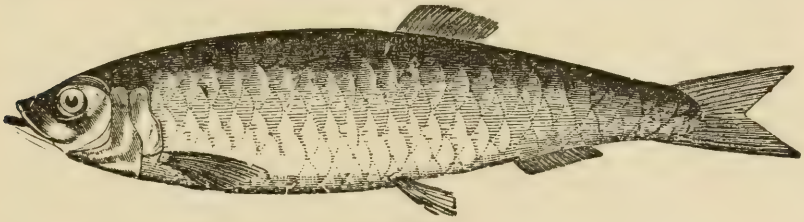
In the water, they have somewhat the manner of the Swallow in the air, except that they always swim in straight lines; and the blackness of their backs, the whiteness of their bellies, and their forked and expanded tails, give them much the same appearance as that of these birds.

OF THE HERRING TRIBE.

THESE fish inhabit the depths of the ocean. They feed on molluscæ, and various kinds of small crustaceous animals, and shell-fish. Three of the species, the Common Herring, the Shad, and the Anchovy, were known to the ancients, and, as articles of food, were held by them in considerable esteem. It is not known that any of these fish are natives of fresh waters. Most of the species are migratory and generally in immense shoals: and most, if not all of them, are excellent food.

THE COMMON HERRING.

Herrings are found in the greatest abundance in the high northern latitudes. In those inaccessible seas that are covered with ice for a



THE HERRING.

great part of the year, they find a quiet and sure retreat from all their numerous enemies. The quantity of food which those seas supply is immensely great.

Thus remotely situated, and defended by the icy rigor of the climate, they live at ease, and multiply beyond expression, issuing thence in such shoals, that, were all the men in the world to be loaded with Herrings, they could not carry off the thousandth part of them. Their enemies, however, are extremely numerous. All the monsters of the deep find them an easy prey; and, in addition to these, th eimmense flocks of sea-fowl that inhabit the polar regions, watch their outset, and spread devastation on all sides.

In their outset, this immense swarm of living creatures is divided into distinct columns, each five or six miles in length, and three or four in breadth, and in their progress they even make the water ripple before them.

In the month of June they are found about the Shetland islands, whence they proceed to the Orkneys, and, then dividing, they surround the islands of great Britain and Ireland, and unite again, off the Land's End, in the British Channel, in September. From this part of the ocean the great united body steers south-west, and is not found any more on that side, or in the Atlantic, until the same time the ensuing year, but next appear off the American coasts. They arrive in

Georgia and Carolina about the end of January, and off the coast of Virginia in February. Hence they coast eastward to New England. They then divide, and go into all the bays, rivers, creeks, and even small streams of water, in amazing numbers, and continue spawning in the fresh water until the end of April, when the old fish return into the sea, where they change their latitudes by a northward direction, and arrive at Newfoundland in May. After this they are no more seen in America till the following spring. Their passing sooner or later up the American rivers, depends on the warmth of the season; and even



YARMOUTH JETTEE.—HERRING BOATS RETURNED.

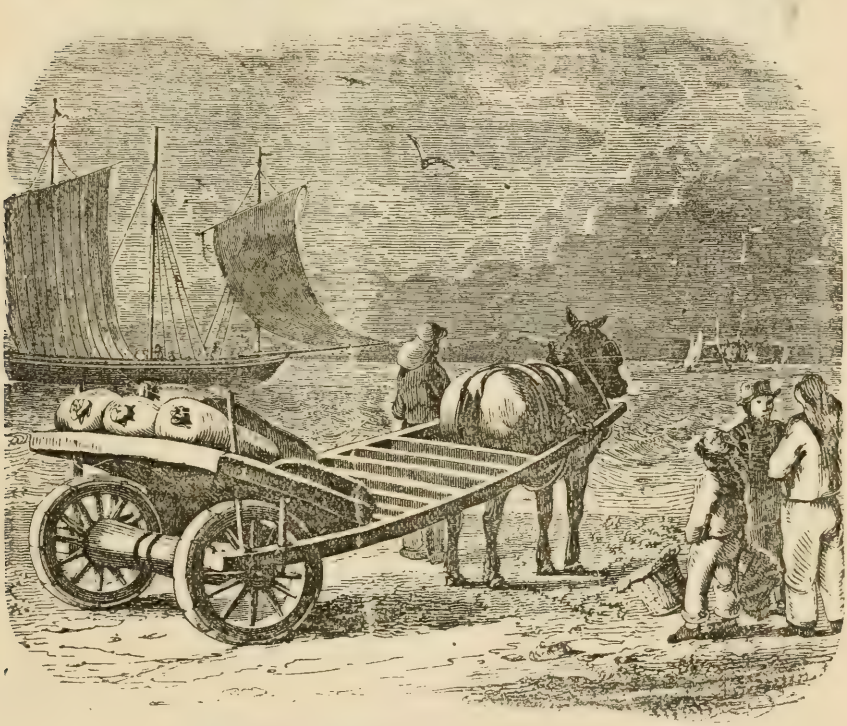
if a few warm days invite them up, and cool weather succeed, their passage is immediately checked till the heat becomes more powerful.

The fecundity of the Herring is astonishing. It has been calculated, that if the offspring of a single Herring could be suffered to multiply unmolested and undiminished for twenty years, they would exhibit a bulk ten times the size of the earth. But happily, Providence has so contrived the balance of nature, by giving them innumerable enemies, as always to keep them within proper bounds.

They once swarmed so excessively on the west side of the Isle of

Skye, that the numbers caught were more than could possibly be carried away. After the boats were all loaded, and the country round was served, the neighboring farmers made them up into composts, and manured their ground with them in the ensuing season. This shoal continued to frequent the coast for many years, but not always in numbers equal to these.

Herrings die almost the moment after they are taken out of the water; whence originated the adage, in common use, *as dead as a Herring*. They also soon become tainted after they are killed. In summer, they are sensibly worse for being out of the water only a few



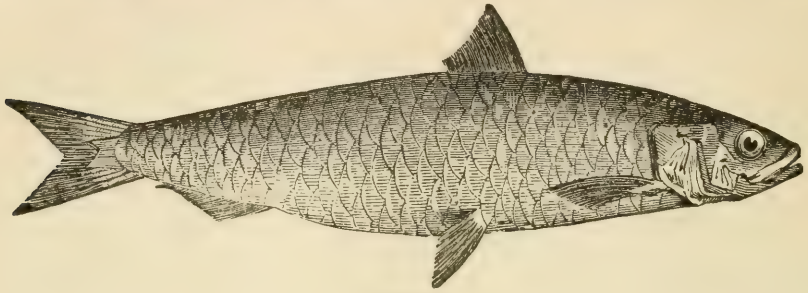
YARMOUTH BEACH CART, FOR CARRYING HERRING TO MARKET

hours; and, if exposed but a few minutes to the rays of the sun, they are perfectly useless, and will not take the salt.

After the nets are hauled, the fish are thrown upon the deck of the vessel, and each of the crew has a certain task assigned to him. One part is employed in opening and gutting them; another in salting, and a third in packing them in the barrels in layers of salt. The red Herrings lie twenty-four hours in the brine; they are then taken out, strung by the head on little wooden spits, and hung in a chimney formed to receive them; after which a fire of brushwood, which yields much smoke, but no flame, is kindled under them, and they remain there till they are sufficiently smoked and dried, when they are put into barrels for carriage.

THE PILCHARD.

About the middle of July, the Pilchards, which are a smaller species of Herring, appear in vast shoals off the coasts of Cornwall. These



PILCHARD

shoals remain till the latter end of October, when it is probable they retire to some undisturbed deep, at a little distance, for the winter. It has been supposed, but improperly, that, like the Herring, they migrate into the arctic regions. If Pilchards performed any migration northward, we should have heard of their being occasionally seen and caught on their passage; but of this we have no authenticated instance. The utmost range of the Pilchards seems to be the Isle of Wight in the British, and Ilfracomb in the Bristol Channel. Forty years back, Christmas was the time of their departure: this alteration in time is a very singular fact.

We have the following account of the Pilchard-fishery from Dr Borlase:—"It employs (he says) a great number of men on the sea, training them thereby to naval affairs; employs men, women, and children, at land, in salting, pressing, washing, and cleaning; in making boats, nets, ropes, and casks. The poor are fed with the refus of the captures, the land with the offals of the fish and salt; the merchant finds the gains of commission and honest commerce, the fishermen the gains of the fish. Ships are often freighted hither with salt, and into foreign countries with the fish, carrying off, at the same time, part of our tin. From a statement, the number of hogsheads exported from Great Britain, each year, for ten years, amounted to twenty-nine thousand seven hundred and ninety-five hogsheads yearly. Every hogshead, for ten years last past, together with the bounty allowed for exportation, and the oil made out of it, has amounted, one year with another, at an average, to the price of one pound thirteen shillings and three-pence; so that the cash paid for Pilchards exported has, at a medium, annually amounted to the sum of forty-nine thousand five hundred and thirty-two pounds and ten shillings."

When Dr. Maton made his tour of the western counties, he and a friend hired a boat to go out and see the Pilchard-fishing at Fowy. He says that the fishing-boats, which are numerous, are usually

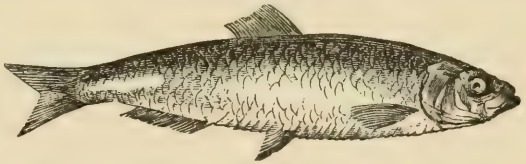
stationed in ten fathoms water, and clear of all breakers. Light sail boats keep out at a little distance before them, to give notice to the fishermen of the approach of a shoal. Persons are also frequently stationed on the neighboring rocks, to watch the course of the fish these are called *huers*, from their setting up a *hue* to the fishermen.

The nets, which are seines, are sometimes two hundred fathoms or more in circumference, and about eighteen fathoms deep. Some of them are said to be capable of holding upwards of two hundred hogsheads of fish, each containing about three thousand. About thirty thousand hogsheads are here considered a tolerably good produce for one season. But it happens, now and then, that the fishery almost entirely fails.

The Dog-fish are great enemies to the Pilchards, often devouring them in amazing numbers.

THE SPRAT.

Sprats are caught on the coasts of the Mediterranean, in such immense shoals, that at a single haul of a large net, as many have sometimes been landed as would have filled between forty and fifty barrels. From the circumstance of these fish being caught near the island of Sardinia in great abundance, and being exported from that island, in barrels, to various parts of the world, they have obtained, in several countries, the name of *Sardine* Sprats are likewise found in the North Sea and the Baltic.

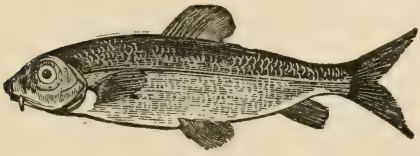


SPRAT.

They usually frequent the deep parts of the sea; but in the autumn they approach the smooth and sandy shores, for the purpose of depositing there their spawn.

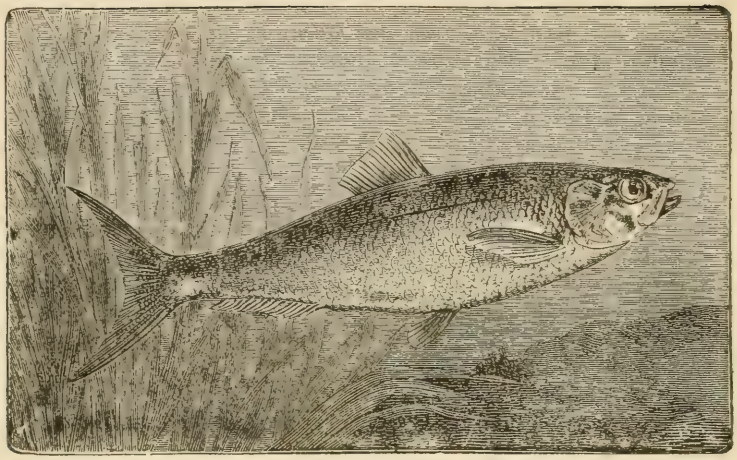
THE SHAD.

Shads appear in the river Rhine in the month of March; in the Severn and Thames, and Delaware, in April, May, and June; and in the Nile in December and January. As soon as they arrive, they deposit their spawn in places where the current is most rapid; and, some months afterwards, return to the sea.



SHAD.

They ascend the Rhine as far as Basil, where they are caught in nets, and osier baskets or traps. In order to attract them into the latter, the fishermen use a bait of peas, prepared in a certain way with myrrh: this bait is put into a small bag, and suspended in the inside.



ALICE SHAD.

It has been asserted that Shads delight in music, and that they are afraid of storms. They are so little tenacious of life, that, like the Herring, they always die as soon as they are taken out of the water.

When these fish are taken out of the sea, they are thin and ill-flavored; but the longer they continue in the rivers, the fatter and more eatable they become. In the Severn they are considered very delicate fish, especially in that part of the river which flows by Gloucester: here they are usually sold at a price higher than that of Salmon. The Thames Shad is esteemed a very coarse and insipid fish. In most countries the males are considered less delicate food than the females.

THE ANCHOVY.

Like the Herring and the Sprats, these fish leave the deeps of the open sea inorder to frequent the smooth and shallow places of the coasts, for the purpose of spawning. Between the months of December and March, immense numbers are caught on the shores of Provence, Brabant, and Catalonia: during June and July, in the English Channel and in the environs of Venice, Genoa, Rome, and Bayonne.

The fishermen generally light a fire on the shore, for the purpose of attracting the Anchovies, when they fish for them in the night. After the Anchovies are cleansed and their heads are cut off, they are cured in a certain way, and packed in small barrels for sale and exportation. The ancient Greeks and Romans prepared from these fish a liquid, which they denominated *garum*, and which was highly esteemed by most of the epicures of that day.

Anchovies are occasionally found both in the North Sea and in the Baltic; but it is supposed that they are in much greater number in the Mediterranean, than in any other part of the world.

OF THE CARP TRIBE.

THE Carp tribe, for the most part, inhabit fresh waters, where they feed on worms, insects, aquatic plants, fish, and clay or mould. Some of them are migratory. Most of the species, which are very numerous, are found only in the northern countries of Europe; and, consequently, were unknown to the ancient naturalists of Greece and Rome.

THE COMMON CARP.

In their general habits, these fish exhibit so great a degree of cunning, as sometimes to be called by the country people *River-fox*. When attempted to be taken by a net, they will often leap over it; or immerse themselves so deep in the mud, as to suffer the net to pass over without touching them. They are also very shy of taking a bait; but, during spawning-time, they are so intent on the business of depositing their ova, that they will suffer themselves to be handled by any one who attempts it. They breed three or four times in the year, but their first spawning is in the beginning of May.



COMMON CARP.

Carp are found in the slow rivers and stagnant waters of Europe and Persia; and here principally in deep holes, under the roots of trees, hollow banks, or great beds of flags, &c. They do not often exceed four feet in length, and twenty pounds in weight; but Jovius mentions some, caught in the lake of Como, in Italy, that weighed two hundred pounds each; and others have been taken in the Dneister five feet in length.

From their quick growth and vast increase, these are considered as the most valuable of all fish for the stocking of ponds; and if the breeding and feeding of them were better understood, and more practised, than they are, the advantages resulting from them would be very great.

By being constantly fed, they may be rendered so familiar as always to come, for food, to the side of the pond where they are kept. Dr Smith, speaking of the Prince of Condé's seat at Chantilly, says, "The most pleasing things about it were the immense shoals of very large Carp, silvered over with age, like silver fish, and perfectly tame; so that, when any passengers approached their watery habitation, they used to come to the shore in such numbers as to heave each other out of the water, begging for bread, of which a quantity was always kept at hand on purpose to feed them. They would even allow themselves to be handled."

Carp are very long-lived: the pond in the garden of Emanuel

College, Cambridge, contained a Carp that had been an inhabitant of it more than seventy years; and Gesner has mentioned an instance of one that was an hundred years old. They are also extremely tenacious of life, and will live for a great length of time out of water.

THE TENCH.

Tench are partial to foul and weedy waters; and their haunts in rivers are chiefly among weeds, and in places well shaded with rushes. These fish thrive best in standing waters, where they lie under weeds, near sluices and pond-heads. They are much more numerous in pools and pits than in rivers; but those that are caught in the latter, are far preferable for the table. They begin to spawn in June, and may be found spawning in some waters till September. The best season for them is from that time until the end of May.



TENCH.

They do not often exceed four or five pounds in weight.

THE GUDGEON.

The food of the Gudgeon consists of aquatic plants, worms, the larvæ of water-insects, and the spawn of fish. They usually swim in small shoals, and are found in gentle streams, where the bed is of sand or gravel. If the bed of the stream be raked or stirred up, they eagerly collect round the spot, and are easily caught with lines baited with small earth-worms.

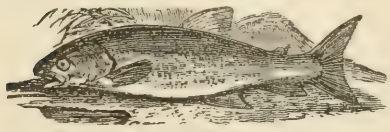


GUDGEON.

The flesh of the Gudgeon is white, of excellent flavor, and easy of digestion.

THE CHUB.

The Chub is a handsome fish; but it is not in esteem for the table, being very coarse, and, when out of season full of small, hairy bones. Its name is derived from the shape of its head; the French and Italians know it by a name synonymous with ours.



CHUB.

Its haunts are rivers, whose bottoms are of sand or clay, or which are bounded by clayey banks; in deep holes, under hollow banks,

shaded by trees or weeds. These fish often float on the surface, and are sometimes found in deep waters, where the currents are strong. In ponds fed by rivulets they grow to a great size. They seldom, however, exceed the weight of four or five pounds.

When the Chub seizes a bait, he bites so eagerly that his jaws are often heard to chop like those of a Dog. He, however, seldom breaks his hold, and, when once he is struck, is soon tired.

THE DACE.

The Dace is a gregarious and lively fish; and during summer is fond of playing near the surface of the water. It is generally found where the water is deep, and the stream is gentle, near the piles of bridges. It also frequents deep holes that are shaded by the leaves of the water-lily; and under the foam on the shallows of streams.



DACE.

These fish seldom weigh more than a pound and a half; but they are exceedingly prolific.

THE ROACH.

This fish is found chiefly in deep, still rivers, where it is often seen in large shoals. In summer it frequents shallows near the tails of fords; or lies under banks among weeds, and shaded by trees or herbage, especially where the water is thick. As the winter approaches, these haunts are changed for deep and still waters.



ROACH.

The Roach is so silly a fish, that it has acquired the name of the *Water-sheep*, in contradistinction to the Carp, which from its subtlety is termed the River-fox. *Sound as a Roach*, is a proverb that appears but indifferently founded.

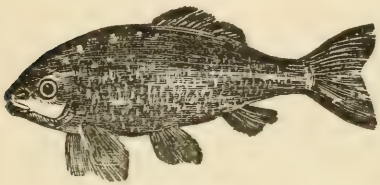
This is a handsome fish, either in the water or when immediately taken out of it. The flesh, although reckoned wholesome, is in little esteem, on account of the great quantity of bones. When Roach are in season, their scales are very smooth; but when they are out of season, these feel like the rough side of an oyster-shell. Their fins also are generally red when the animals are in perfection. These fish differ much in quality, according to the rivers in which they are caught. None are good that are kept in ponds.

Roach feed on aquatic plants and vermes. Their usual weight is from half a pound to two pounds. Some, however, have been known to weigh as much as five pounds.

The baits used in catching Roach are various kinds of worms, flies, and pastes. The time for angling is, in mild cloudy weather, all the day; in hot weather, only in the mornings and evenings; and in cold weather, during the middle of the day.

THE GOLD-FISH.

Gold-fish are natives of China; and the most beautiful kinds are caught in a small lake in the province of Chekyang, at the foot of a mountain called Tsyen-king. They were first introduced into England about the year 1691, but were not generally known till thirty years afterwards.



GOLD-FISH.

In China they are kept in ponds, or large porcelain vessels, by almost every person of distinction. In these they are very lively and active, sporting about the surface of the water with great vivacity; but they are so delicate, that, if cannon be fired, or any substance giving out a powerful smell, as pitch or tar, are burned near them, great numbers will be killed. In each of the ponds or basins where they are kept, there is an earthen pan, with holes in it, turned upside down. Under this they retire when, at any time, they find the rays of the sun too powerful. The water is changed three or four times a week. Whilst this is done, it is necessary to remove the fish into another vessel; but they ought always to be taken out by means of a net, for the least handling would destroy them.

When Gold-fish are kept in ponds, they are often taught to rise to the surface of the water, at the sound of a bell, to be fed. At Pekin, for three or four months of the winter, or whilst the cold weather lasts, the fish in the ponds are not fed at all. They are able, during that time, to obtain the small quantity of food which they require, from the water. In order to prevent their being frozen, they are often taken into the houses, and kept in china vessels, till the warm weather of spring allows their being returned to their ponds with safety.

In hot countries, Gold-fish multiply very fast, if care be taken to remove the spawn, which swims on the surface of the water, into other ponds; for otherwise, the animals would devour the greater part of it. The young fry, when first produced, are perfectly black; but they afterwards change to white, and then to gold color. The latter colors appear first about the tail, and extend upwards.

The smallest fish are preferred, not only from their being more beautiful than the larger ones, but because a greater number of them can be kept. These are of a fine orange red color, appearing as if sprinkled over with gold-dust. Some, however, are white, like silver, and others white spotted with red. When dead they lose all their lustre. The females are known from the males by several white spots

which they have near the gills, and the pectoral fins: the males have these parts very bright and shining.

In China the Gold-fish are fed with balls of paste, and the yolks of eggs boiled very hard. In England, many persons are of opinion that they need no aliment. It is true that they will subsist for a long while without any other food than what they can collect from water frequently changed; yet they must draw some support from animalcules and other nourishment supplied by the water. That they are best pleased by such slender diet may easily be confuted, since they will readily, if not greedily, seize crumbs that are thrown to them. Bread ought, however, to be given sparingly, lest, turning sour, it corrupt the water.

Gold-fish do not often multiply in very close confinement. If it be desirable to have them bred, they must be put into a tolerably large reservoir, through which a stream of water runs, and in which there are some deep places.

When the Gold-fish was originally brought from China to England, about two hundred years since, it was considered a great curiosity; now, however, it is quite common, and is found to live in ponds even when the surface of the water is thickly covered with ice. The ponds in Christ Church College, and the Botanic Gardens, Oxford, are thickly populated with these beautiful fish, which increase with the most marvelous rapidity. The pond in the centre of the Clarendon Printing Office was stocked with these fish, and as the spare water from the steam-engine used in the works passed into the pond, they throve amazingly. One unfortunate morning, the surface of the pond was covered with Golden Carp, all floating dead. Some verdigris had formed in some part of the engine, had been washed into the pond, and had poisoned all its finny inhabitants.

Gold-fish appear to have been first brought to the United States from England. They were rapidly diffused to every part of the country. Formerly they were considered great rarities and were seen only in the parlors and conservatories of wealthy people, where, in their highly ornamented glass globes and vases, they attracted much attention and admiration; but now they are raised in ponds for sale, are kept by all classes of people in their houses for ornaments, and form one of the usual attractions to the soda water fountain. In these latter places they are kept in elegantly wrought marble vases. The keeping of them costs very little trouble, the principal precaution necessary for their healthy existence being a frequent change of the water in the globe or vase in which they live.

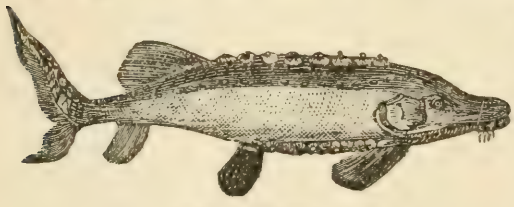
CHONDROPTERYGIOUS FISH.

OF THE STURGEONS IN GENERAL.

All the species of Sturgeons are inhabitants of the sea, though some of them occasionally go up the wider rivers to spawn. They are of large size, seldom measuring, when full-grown, less than three or four feet in length The flesh of the whole is reckoned extremely delicious; and to the inhabitants on the banks of the Caspian Sea, and indeed of many other parts both of Europe and America, these fish are very useful as an article of commerce. Their usual food is worms and other fish.

THE COMMON STURGEON.

The tendrils on the snout of the Sturgeon are three or four inches in length, and have so great a resemblance in form to earth-worms, that at first sight, they might be mistaken for such. This clumsy, toothless fish, is supposed, by this contrivance, to keep himself in good condition, the solidity of his flesh evidently showing him to be a fish of prey. He is said to hide his large body among the weeds near the sea-coast, or at the mouths of large rivers, only exposing his tendrils. Small fish or sea-insects, mistaking these for real worms, approach in the hope of obtaining food, and are sucked into the jaws of their enemy. The Sturgeon has been supposed by some persons, to root into the mud at the bottom of the sea or rivers; but the tendrils above mentioned, which hang from his snout over his mouth, must themselves be very inconvenient for this purpose; as he has no jaws, he evidently lives by suction, and, during his residence in the sea, marine insects are generally found in his stomach.



COMMON STURGEON.

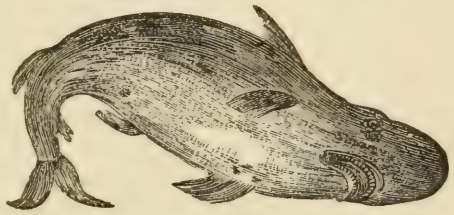
At the approach of spring, Sturgeons leave the deep recesses of the sea, and enter the rivers to spawn; and from May to July the American rivers abound with them. Here they are often observed to leap to the height of several yards out of the water; this they do in an erect position, falling back again on their sides with such noise, as to be heard in still evenings at a great distance. They have often been known, at these times, to fall into small boats, and sink them.

In some rivers of Virginia, Sturgeons are found in such numbers, that six hundred have been taken in two days, with no more trouble than putting down a pole, with a hook at the end, to the bottom, and drawing it up again, on feeling it rub against a fish. They are, however, chiefly killed in the night with harpoons, attracted by the light of torches made of the wood of the black pine. On the shores are frequently seen the bodies of Sturgeons that have been wounded with spears, and have afterwards died.

The fecundity of these fish is exceedingly great. Catesby says, that the females frequently contain a bushel of spawn each; and Leeuwenhoek found in the roe of one of them no fewer than one hundred and fifty billion eggs.

OF THE SHARK TRIBE.

THE animals that compose this rapacious tribe, are entirely marine and are more frequent in hot than in temperate climates. They are in general solitary, and often wander to vast distances, devouring almost everything that comes in their way, which they are able to swallow. Some of them will follow vessels several hundred leagues, for the carcasses and filth that are thrown overboard. The size to which they grow is enormous, as they often weigh from one to four thousand pounds each. Some few species are gregarious, and live on molluscæ and other marine worms. They are all viviparous; their offspring when first protruded, being enclosed (alive) in a square, pellucid, horny case, terminated at the four corners by long, slender filaments, which are generally found twisted round corallines, sea-weed, and other fixed substances.



SHARK.

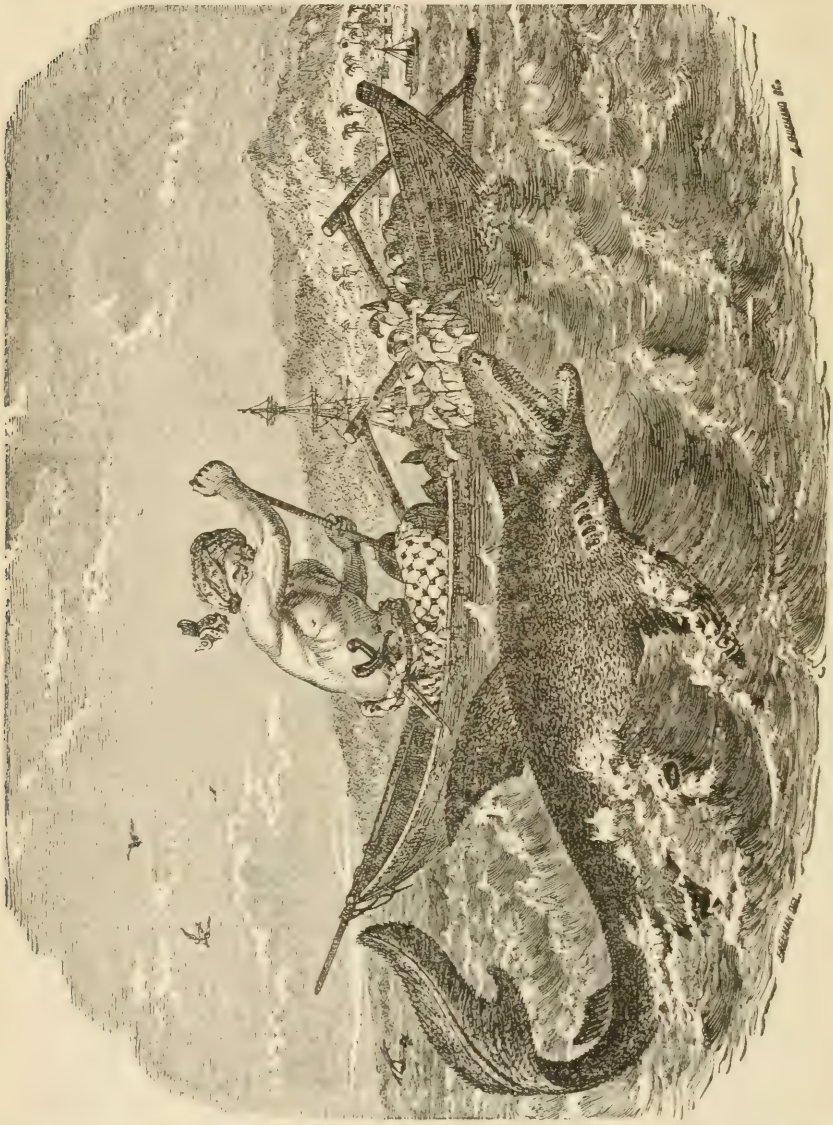
Their flesh is altogether so tough, coarse, and of such a disagreeable smell, that even the young-ones are scarcely eatable. Their bodies emit a phosphoric light in the dark. The skin is rough, and is in general use for polishing ivory, wood, and other substances, thongs and carriage traces are also occasionally made of it. The liver is generally found to yield a considerable quantity of oil There are upwards of thirty species.

THE WHITE SHARK.

This dreadful species of Shark has six rows of teeth, hard, sharply pointed, and of a wedge-like figure. These he has the power of erecting and depressing at pleasure. When the animal is at rest, they are quite flat in his mouth: but, when prey is to be seized, they are instantly erected by a set of muscles that join them to the jaw. Thus, with open

mouth, goggling eyes, and large and bristly fins, his whole aspect is an emphatical picture of the fiercest, deepest and most savage malignity.

It is a fortunate circumstance, for those who would avoid its attacks, that its mouth is so situated, under the head, that it has to throw itself on one side in order to seize its prey; for its velocity in the water



SHARK ATTACKING BOATMEN.

is so great, that nothing of which it was once in pursuit, would otherwise be able to escape its voracity.

These creatures are the dread of sailors in all the hot climates; for they constantly attend ships, in expectation of what may be thrown

overboard; and if, while a Shark is present, any of the men have that misfortune, they inevitably perish.

The master of a Guinea-ship informed Mr. Pennant, that a rage for suicide prevailed among his slaves, from an opinion entertained by the unfortunate wretches, that, after death, they should be restored to their families, friends, and country. To convince them that their bodies could never be reanimated, he ordered the corpse of one that was just dead, to be tied by the heels to a rope, and lowered into the sea. It was drawn up again as quickly as the united force of the crew could do it; yet, in that short time, the Sharks had devoured every part but the feet, which were secured by the end of the cord.

Persons, while swimming, have often been seized and devoured by Sharks. The late Sir Brooke Watson was, some years ago, swimming at a little distance from a ship, when he saw a Shark making towards him. Struck with terror at its approach, he cried out for assistance. A rope was instantly thrown; and even while the men were in the act of drawing him up the ship's side, the monster darted after him, and, at a single snap, tore off his leg.

In the pearl-fisheries of South America, every negro, in order to defend himself against these animals, carries with him into the water a sharp knife, which, if the fish offers to assault him, he endeavors to strike into its belly; on which it generally swims off. The officers who are in the vessels, keep a watchful eye on these voracious creatures; and, when they observe them approach, shake the ropes fastened to the negroes, in order to put them on their guard. Many, when the divers have been in danger, have thrown themselves into the water, with knives in their hands, and have hastened to their defence; but too often all their dexterity and precaution have been of no avail.

We are told, that in the reign of Queen Anne some of the men of an English merchant-ship, which had arrived at Barbadoes, were one day bathing in the sea, when a large Shark appeared, and sprung forward directly at them. A person from the ship called out to warn them of their danger; on which they all immediately swam to the vessel, and arrived in perfect safety, except one poor man, who was cut in two by the Shark, almost within reach of the oars. A comrade and intimate friend of the unfortunate victim, when he observed the severed trunk of his companion, was seized with a degree of horror, that words cannot describe. The insatiable Shark was seen traversing the bloody surface in search of the remainder of his prey, when the brave youth plunged into the water, determining either to make the Shark disgorge, or to be buried himself in the same grave. He held in his hand a long and sharp-pointed knife, and the rapacious animal pushed furiously towards him; he had turned on his side, and had opened his enormous jaws, in order to seize him, when the youth, diving dexterously under, seized him with his left hand somewhere before the upper fins, and stabbed him several times in the belly. The Shark, enraged with pain and streaming with blood, plunged in all directions in order to disengage himself from his enemy. The crews of the surrounding vessels saw that the combat

was decided; but they were ignorant which was slain, until the Shark, weakened by loss of blood, made towards the shore, and along with him his conqueror; who, flushed with victory, pushed his



SHARK FISHING.

foe with redoubled ardor, and by the aid of an ebbing tide, dragged him on shore. Here he ripped up the bowels of the animal, obtained the severed remainder of his friend's body, and buried it with the trunk in the same grave. This story, however incredible it may appear, is related in the history of Barbadoes, on the most satisfactory authority.

The South Sea islanders are not in the least afraid of the Sharks, but will swim among them without exhibiting the least signs of fear. "I have seen," says Captain Portlock, "five or six large Sharks swimming about the ship, when there have been upwards of a hundred Indians in the water, both men and women: they seem quite indifferent respecting them, and the Sharks never offered to make an attack on any of these people, and yet at the same time would greedily seize our baits; whence it is manifest that these people derive their confidence of safety from their experience, that they are able to repel the attacks of those devouring monsters."

A sailor, on the coast of California, on plunging into the sea, was seized by a Shark; but, by a most extraordinary feat of activity, he cleared himself, and, though much wounded, threw blood and water at the animal, to show his bravery and contempt. But the voracious monster seized him with horrid violence a second time, and in a moment dragged him to the bottom. His companions, though not far from him, and much affected by the loss, were not able to render him any assistance.

We are told that notwithstanding the voracity of these creatures, they will not devour any feathered animal that is thrown overboard; but that they will readily take a bait of a piece of flesh fastened on an iron crook. They are so tenacious of life, as to move about long after their head is cut off.

Their flesh is sometimes eaten by sailors on long voyages; and, though exceedingly coarse and rank, it is generally considered better than that of any others of the tribe. The skin is rough, hard, and prickly; and, when properly manufactured, is used in covering instrument cases, under the name of *shagreen*.

THE HAMMER-HEADED SHARK.

The Hammer-headed Shark inhabits the same latitudes. This curiously constructed fish closely resembles the White Shark in all respects but the head, which is widened out at each side, exactly like a double-headed hammer or mallet. The eyes, being placed at each extremity of the head, must of course possess a very extended power of vision.

THE BASKING SHARK, OR MONK FISH.

This species has derived its name from its propensity to lie on the surface of the water, as if to bask itself in the sun. Though a very large fish, it possesses none of the voracity and ferociousness that mark the generality of the Shark tribe. It will frequently lie motionless on the surface of the water, generally on its belly but sometimes on its back; and it seems so little afraid of mankind, as often to suffer itself to be patted and stroked.

Their food consists entirely of marine-plants, and some of the species of medusæ. They swim very deliberately, and generally with their upper fins above water. Sometimes they may be seen sporting about among the waves, and leaping several feet above the surface.



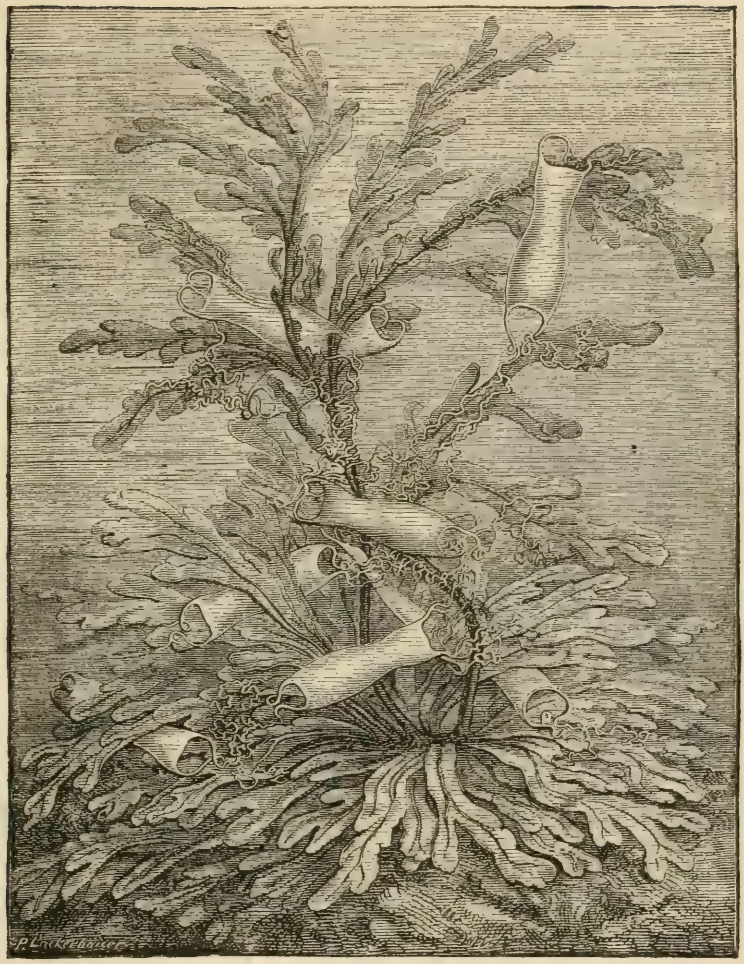
MONK FISH, OR BASKING SHARK.

Their liver is of such immense size, as frequently to weigh nearly a thousand pounds. From this a great quantity of good oil may be extracted; so much, indeed, that the oil of a single fish will sometimes sell for twenty or thirty pounds sterling.

The inhabitants of the northern coasts of Europe are very alert in the pursuit, and very dexterous in the killing, of these fish. When pursued, the Basking Shark does not accelerate its motion, till the boat comes almost in contact with it, when the harpooner strikes his weapon into its body, as near the gills as he can. These animals seem not to be very susceptible of pain; for they often remain in the same place, till the united strength of two men is exerted to force the harpoon deeper. As soon as they perceive themselves wounded, they plunge headlong to the bottom; and frequently coil the rope round their bodies in agony, attempting to disengage themselves from the fatal instrument, by rolling on the ground. Discovering that these efforts are in vain, they swim off with such amazing rapidity, that one instance has occurred of a Basking Shark towing to some distance a vessel of seventy tons burden, against a fresh gale. They sometimes run off with two hundred fathoms of line, and two harpoons in them; and will employ the men from twelve to twenty-four hours before they are subdued.

THE COMMON DOG-FISH.

So excessively voracious are these animals, that they are altogether fearless of mankind. They follow vessels with great eagerness seizing with avidity every thing eatable that is thrown overboard and they have sometimes been known to throw themselves on fisher-



DOG FISH EGGS.

men, and on persons bathing in the sea. As, however, they are smaller and more weak than most other Sharks, they do not attack their more exposed enemies by open force. In combating them, it is necessary to have recourse to stratagem. They consequently, for this purpose, conceal themselves in mud, and lie in ambush, like the Rays, until they have an opportunity of acting offensively with success. Their usual food consists of fish and other marine animals, of which they destroy immense numbers.

Their flesh is hard and disagreeable to the taste, diffusing also a strong odor, which somewhat resembles that of musk. Their dried skins constitute the well-known article of commerce called *shagreen*, or the *skin of the Dog-fish*. The small and hard tubercles with which these are covered, render them useful in the polishing of wood, ivory and even of iron.

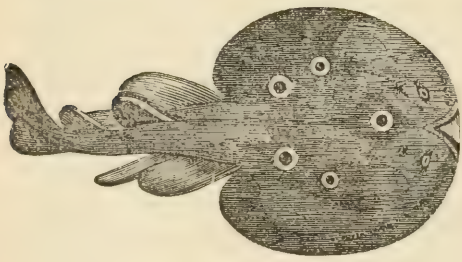
OF THE RAY TRIBE.

THE Rays are entirely confined to the sea; and, from being destitute of an air-bladder to buoy them, they live altogether at the bottom, and chiefly in deep water. They subsist on shell-fish, or any animal substances that come in their way. Some of them become of a size so large, as to weigh two hundred pounds and upwards; in which case they are sometimes dangerous enemies to man, whom they are said to destroy, by getting him down, lying upon, and devouring him. They seldom produce more than one young-one at a time. This, as in the Sharks, is enclosed in a four-cornered bag or shell, which ends in slender points; but which does not (as in those) extend into long filaments. The liver is large, and often produces a great quantity of oil.

In a fresh state, most of the Rays have a fetid and unpleasant smell, but nearly the whole are eatable. There are about *twenty* species. Those with which we are best acquainted, are the Skate, the Thorn back, and the Torpedo, or Electric Ray.

THE TORPEDO, OR ELECTRIC RAY.

Torpedoes are partial to sandy bottoms, in about forty fathoms of water, where they often bury themselves by flinging the sand over them, with a quick flapping of all their extremities. In Torbay they are generally caught, like other flat-fish, with trawl-nets; and instances have occurred of their seizing a bait.



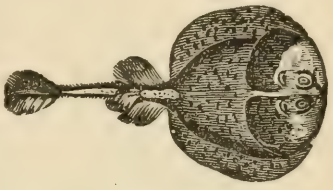
TORPEDO.

This fish possesses the same property of benumbing its prey, as that already described in the Electric Eel; and when it is in health and vigor, the shock that it communicates is very severe: but its powers always decline as the animal declines in strength; and when it expires, they entirely cease. In winter these fish are also much less formidable than during warm weather.

Dr. Ingenhousz had for some time, in a tub of sea-water, a Torpedo which, during winter, seemed to be feeble. On taking it into his hands, and pressing it on each side of the head, a sudden tremor, which lasted for two or three seconds, passed into his fingers, but extended no further. After a few seconds, the same trembling was felt again; and again several times, after different intervals. The sensation, he says, was similar to that which he should have felt by the discharge of several small electrical bottles, one after another, into

his hand. The shocks sometimes followed each other very quickly, and increased in strength towards the last. Probably, from the weakness of the fish, the shock could not be communicated through a brass chain, though the usual contortion was evidently made. A coated vial was applied to it, but could not be charged.

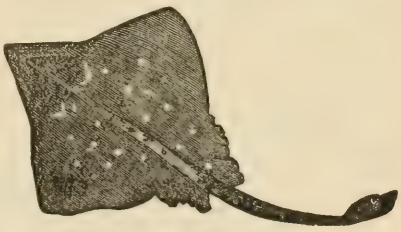
From some experiments that were made by Mr. Walsh, on a very stout and healthy Torpedo, it appears that although it seemed to possess many electric properties, yet no spark whatever could be discovered to proceed from it, nor were pith-balls ever found to be affected by it. When it was insulated, it gave a shock to persons likewise insulated, and even to several that took hold of each other's hands: this it did forty or fifty times successively, and with very little diminution of force. If touched only with one finger, the shock was so great as to be felt in both hands. Each effort was accompanied by a depression of the eyes, which plainly indicated the attempts that were made upon non-conductors. Although the animal was in full vigor, it was not able to force the torpedinal fluid across the minutest tract of air, not even from one link of a small chain freely suspended to another, nor through an almost invisible separation made by a penknife in a slip of tin-foil pasted on sealing-wax.



TORPEDO.

THE SKATE AND THORNBACK.

The Skate is the largest, and at the same time the most useful fish of its tribe. Its flesh is white, firm and good. In some parts of the Continent, where these fish are caught in great abundance, they are dried for sale. The best season for Skate is the spring of the year. They sometimes attain a very large size. Willougby speaks of one so huge, that it would have served one hundred and twenty men for dinner.



SKATE.

From the month of May, until the beginning of September, the females are occupied in producing their offspring. This they usually do on coasts and in places where they are liable to little interruption. Each of the young-ones is enclosed in an oblong, angular bag, about half an inch thick in the middle. These are called *purses* by the fishermen. After the fish have escaped, the empty bags are frequently cast ashore by the tide.

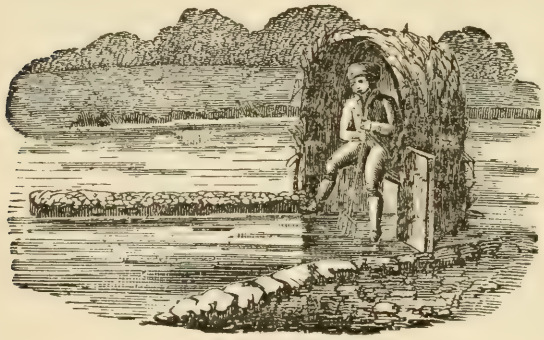
Dr. Monroe has remarked, that in the gills of a large Skate there are upwards of one hundred and forty-four thousand subdivisions, or folds: and that the whole extent of this membrane, whose surface is nearly equal to that of the whole human body, may be seen, by a

microscope, to be covered with a net-work of vessels that are not only extremely minute, but exquisitely beautiful.

In all its habits the *Thornback* resembles the Skate, except as to the time in which its offspring are produced. This is usually about the months of June and July; during which time these fish are caught in great numbers.

OF THE LAMPREY TRIBE.

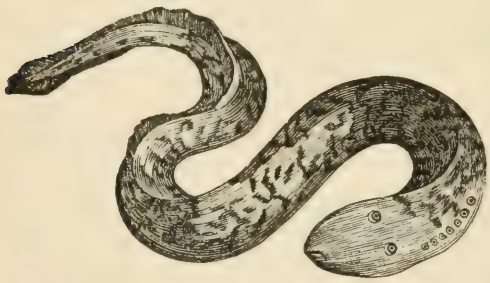
The bodies of these fish are slippery and mucous. Three of the species are inhabitants exclusively of fresh waters, and one only is known to frequent the sea. They are all much esteemed as food. So tenacious are they of life, that they will even continue firmly attached, by their mouths, to solid bodies, for some time after they are cut in half. They feed on worms, insects, small fish, and mud or aquatic plants.



SPEAKING FISH

THE TRUE AND LESSER LAMPREY.

The surprising faculty of adhesion to solid bodies, possessed by these fish, arises from their drawing up the middle of their circular mouth, and exhausting the air from under it. The edges of the mouth are thus pressed closely down to the object, by the weight of the super incumbent atmosphere.



LAMPREY.

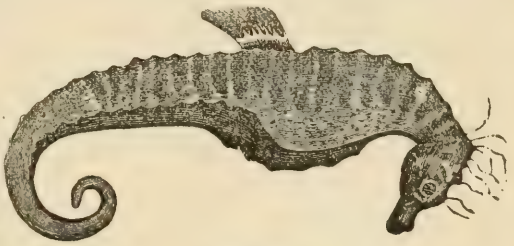
Possessed of an apparatus so formidable as the mouth of the True Lamprey, this fish, although it feeds on animal substances, does not attack the larger and more powerful inhabitants of the water. It usually preys on marine worms and small fish; and, like the Eel, will even content itself with the flesh of dead and putrid animals. In fact, the teeth, from the circumstance of their not being fixed in bony jaws, are inca

pable of offensive operations against animals more powerful than themselves.

The branchial orifices, or gills, on each side of the neck of the Lamprey, are mistaken by many persons for eyes. This fish is destitute of bones, having only strong cartilages in place of them.

THE SEA-HORSE.

The singular fish called the Sea-Horse has often been found off the southern coasts of England. The habits of this fish are very singular and interesting. A pair were kept alive for some time in a glass vessel, and exhibited considerable activity and intelligence. They swam about with an undulating kind of movement, and frequently twined their tails round the weeds placed in their prison. Their eyes moved independently of each other, like those of the Chameleon, and the changeable tints of the head closely resemble that animal.



SEA-HORSE.

More than once, these curious fish have been seen curled up in oyster shells.



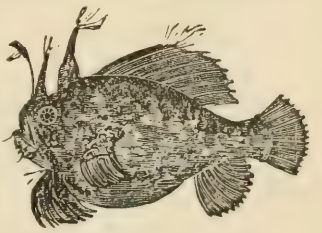
PIPE-FISH.

The singular creatures called Pipe-fish also belong to the Syngnathidæ.

THE ANGLER, OR FISHING FROG

The Angler, or Fishing Frog, as it is more generally called, is not uncommon in all the European seas. The peculiar formation of its pectoral fins enables it to crawl for some distance on land.

On its head are two elongated bony appendages, curiously articulated to the skull by a joint formed something like the links of a chain, and capable of movement in any direction. The Angler couches close to the bottom of the sea, and by the movement of its pectoral fins stirs up the sand and mud, and agitates the bony appendages amid the turbid cloud produced. The small fishes, observing the muddy water, and taking the filaments for worms, approach to seize them, and are instantly engulphed in the capacious jaws of the crafty Angler.



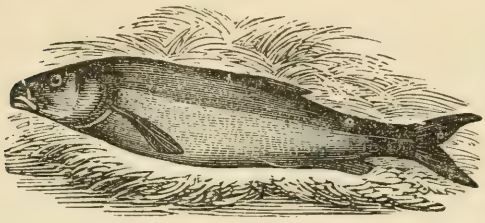
ANGLER.

The voracity of the Angler is so great, that when caught in a net

together with other fish, it generally devours some of its fellow prisoners—a useless act, for the fishermen mostly open its stomach, and recapture the flounders and other fish found in its interior.

THE BARBEL.

The Barbel is found in most of the European rivers. Its flesh is course and unsavory, but it is eagerly sought after by anglers, as the spirit and vigor displayed by it when hooked afford fine sport. It is peculiarly apt at breaking the line, a feat sometimes accomplished by a violent blow of the tail, and sometimes by contriving to twist the line round a root or post, and giving a sudden jerk.



BARBEL.

It feeds principally on larvæ and molluscs, inhabiting the banks, and obtains them by rooting in the sand with its snout. The Barbels, or beards, hanging from the upper jaw doubtless assist in these investigations. It frequently grows to a very great size, weighing from fifteen to eighteen pounds, and measuring upwards of three feet in length. Many are captured by nets during the summer, at which season they frequent the weedy parts of the river in shoals; but in winter they retire to the shelter afforded by banks and old woodwork. Several good swimmers have been known to dive after the Barbel, as they lay pressed against the banks, and to bring up one each time, not unfrequently appearing with two, one in each hand.

THE DEVIL FISH.

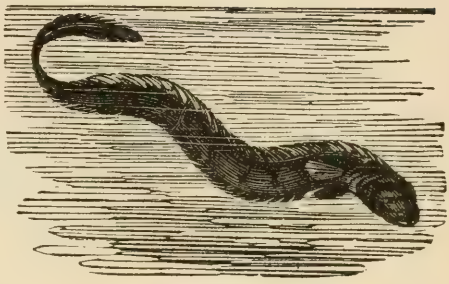


THE DEVIL FISH.

The Sea Devil, or Fishing Frog, is an inhabitant of the British Seas. It grows to a large size, some being between four and five feet long. The fishermen on that coast have a great regard for this fish, from a supposition that it is a great enemy to the Dog-fish; and whenever they take it with their lines, set it at liberty. It is a fish of very great deformity; the head is much bigger than the whole body; is round at the circumference, and flat above, the mouth of a prodigious wideness.

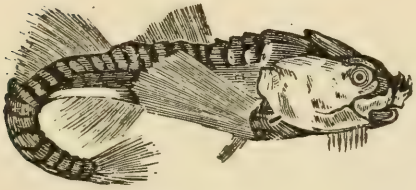
THE BLENNIES.

The species of this genus are small, live in shoals, but not in great numbers: they are very active and tenacious of life, and frequent rocky coasts, where they may often be found in the pools of water left by the tide, hiding themselves among the weeds, and in the crevices of the rocks.



BLENNIES.

THE FATHER LASHER.

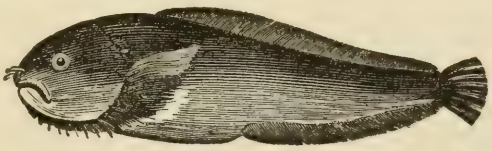


FATHER LASHER.

The Father Lasher is found on the European coasts. It has a slender body, thick neck, and is a very rapid swimmer. It feeds on smaller fish, and receives its name from its violent efforts when taken.

THE SUCKING FISH.

The great resort of this species is in the northern seas, about the coast of Greenland. Great numbers are devoured by Seals, who swallow all but the skins; quantities of which, thus emptied, are seen floating about in the spring months.



THE SUCKING FISH.

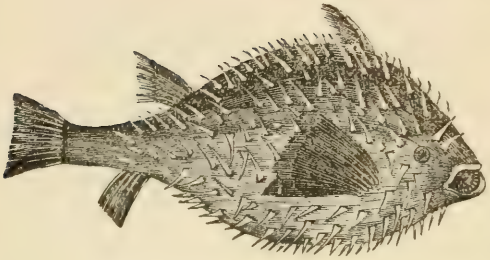
THE HORNED SILURUS.



HORNED SILURUS.

The Horned Silurus are chiefly distinguished by the want of true scales, having merely a naked skin, or large osseous plates. The species included in this group are mostly river-fish, of considerable size, inhabiting warm climates.

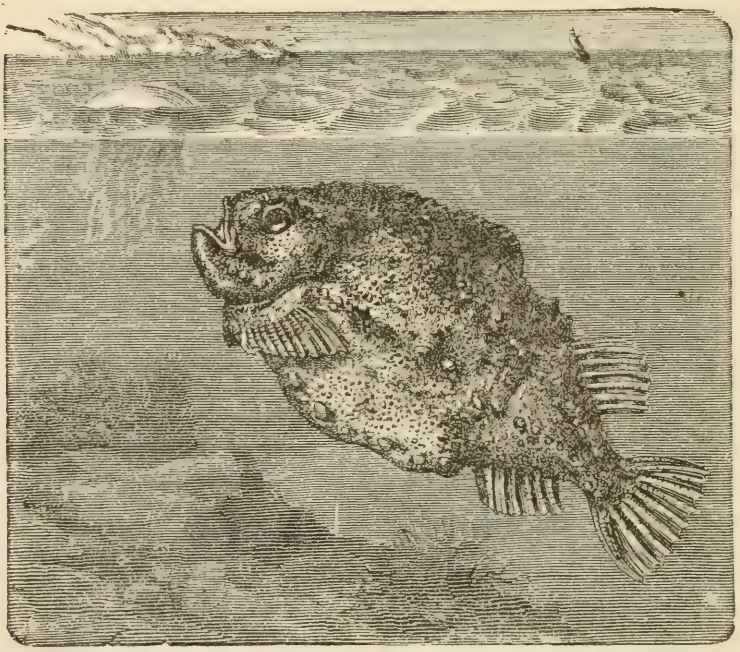
THE SEA PORCUPINE.



The Sea Porcupine is found on the coast of Guinea, and in the Indian Ocean. Like the common Porcupine, it is covered with quills or spines, which it can erect at pleasure when angry.

THE LUMP SUCKER.

This fish derives its name from the clumsiness of its form: its height being about half its length, and its thickness about half its height.



LUMP FISH.

These fish are very remarkable for the manner in which their ventral fins are arranged. They are united by a membrane so as to form a kind of oval and concave disc, by means of which they are enabled to adhere with great force to any substance to which they apply themselves. It is found on the coast of Greenland.

INSECTS.

COLEOPTEROUS INSECTS.

THE insects of the Linnean order *Coleoptera* have crustaceous elytra or wing-cases, which shut together and form a longitudinal suture down the back.

OF THE SCARABÆUS, OR BEETLE TRIBE.

THE larvæ or grubs of these insects have each six feet. In their general appearance they are not much unlike the Caterpillars of some of the Butterflies, having their bodies composed of rings, and being somewhat hairy. Most of them live entirely under the surface of the ground, and feed on the roots of plants, &c. Their *pupa*, or *chrysalis*, generally lies dormant in the earth till the perfect insect bursts out.

Beetles inhabit and feed in various situations. Some are found in the dung of animals, or in the earth immediately under the dung. Others live on the leaves of trees; and others on flowers.

THE BULL-COMBER, CLOCK-BEETLE, AND SPRING BEETLE.

These insects are all nourished, both in their larva and perfect state, in the dung of animals, which they are able to discover by their acute faculty of smell, or otherwise, at an immense distance. Under these substances they dig, in the earth, cylindrical holes, of considerable depth, in which they deposit their eggs.



CLOCK-BEETLE.

They usually fly in the evening, towards the end of twilight. The droning noise produced by their wings, at that time, is often heard, particularly during the summer season. When touched, these insects counterfeit death; but they do not contract their legs, in the manner of the Dermestes, and some other Beetles: they stretch them out, so as to give the appearance of stiffness and rigidity, as though the animals had been some time dead.

All these insects are subject to be infested by a species of *acarus*, or tick, and sometimes in such numbers that they are scarcely able to walk in consequence of these crowding closely round the joints of the legs and thighs. A German writer states, that the females of that country used formerly to employ the thighs of some of the most brilliant of these Beetles, in the ornamental parts of their head-dress.

THE COCK-CHAFER.

The eggs of the Cock-chafer are deposited in the ground by the parent insect, whose fore-legs are very short, and are well calculated for burrowing. From each of these eggs proceeds, after a short time, a whitish worm with six legs, a red head, and strong claws, and about an inch and a half long, which is destined to live in the earth under that form for four years, and there to undergo various changes of its skin, until it assumes its chrysalid form. It subsists, during its subterraneous abode, on the roots of trees and plants, committing ravages often of the most deplorable nature.

The larvæ, continue four years in the ground; and when, at the end of this period, they are about to undergo their change, they dig deep into the earth, sometimes five or six feet, and there spin a smooth case, in which they change into a *pupa* or chrysalis. They remain under this form all the winter, until the month of February, when they become perfect Beetles, but with their bodies quite soft and white. In May the parts are hardened, and they then come forth out of the earth. This accounts for our often finding the perfect insects in the ground.

Cock-chafers fly in the evening towards sunset, and particularly about places where there are trees. They eat the leaves of the sycamore, the lime, the beech, the willow, and those of all kinds of fruit-trees. In its winged state this insect exhibits not less voracity on the leaves of trees, than it before did in its grub state in the earth; for, such is the avidity with which it devours its food, and so immense are sometimes the numbers, that, in particular districts, they have become an oppressive scourge, which has produced much calamity among the people.

In the year 1688, the Cock-chafers appeared on the hedges and trees of the south-west coast of the county of Galway, Ireland, in clusters of thousands, clinging to each other's backs, in the manner of bees when they swarm. During the day they continued quiet, but towards sunset the whole were in motion; and the humming noise of their wings sounded like distant drums. Their numbers were so great, that, for the space of two or three square miles, they entirely darkened the air. Persons travelling on the roads, or who were abroad in the fields, found it difficult to make their way home, as the insects were continually beating against their faces, and occasioned great pain. In a very short time, the leaves of all the trees, for several miles round, were destroyed, leaving the whole country, though it was near mid-summer as naked and desolate as it would have been in the middle

of winter. The noise which these enormous swarms made in seizing and devouring the leaves, was so loud as to have been compared to the distant sawing of timber. Swine and poultry destroyed them in vast numbers. These waited under the trees for the clusters dropping, and devoured such swarms as to become fat upon them alone. Even the native Irish, from the insects having eaten up the whole produce of the ground, adopted a mode of cooking them, and used them as food. Towards the end of summer they disappeared so suddenly, that, in a few days, there was not a single one left.

About sixty years ago a farm near Norwich, England, was so infested with Cock-chafers, that the farmer and his servants affirmed that they gathered eighty bushels of them; and the grubs had done so much injury, that the court of that city, in compassion to the poor man's misfortune, allowed him 25*l.*

Rooks and Gulls devour immense numbers of the grubs of this destructive insect, by which they render a most essential service to mankind, and great care ought to be taken to cherish and protect them. The chief employment of Rooks, during nearly three months in the spring of the year, is to search for insects of this sort as food; and the havoc that a numerous flock makes among them must be very great.

A gentleman, having found a nest of five young Jays, remarked that each of these birds, while yet very young, consumed at least fifteen full-sized grubs of the Chafer in a day; and averaging their sizes, it may be said that each consumed twenty: this for the five makes a hundred; and if we suppose the parents to devour between them the same number, it appears that the whole family consumed about two hundred every day. These in three months, would amount to twenty thousand. But as the grub continues in the same state for four years, this single pair, with their family alone, without reckoning their descendants after the first year, would destroy as many as eighty thousand grubs. Now, supposing that forty thousand of these may be females, and that each female lays, as is the case, about two hundred eggs, it will appear that no fewer than *eight millions* of grubs have been destroyed, or at least prevented from being hatched, by this single family of Jays.

It is true, that in these labors of the Rooks, Jays, and some other birds, they sometimes do mischief to man; and yet there can be little doubt, that the damage they thus commit is amply repaid by the benefits that result from these their unceasing exertions.

Some farmers plough the ground in order to expose the grubs to the birds; and others take the pains to dig deeper, wherever the Rooks point them out by their attempts to reach them. When the insects are in their winged state, to shake the trees at noon, during the time that they are all either asleep or in a state of inactive stupor, and to gather or sweep them up from the ground, seems the most eligible method. One person has been known to kill in a day, by this method, above a thousand: by which, though in so short a space of time, at a fair calculation, he prevented no fewer than a hundred thousand eggs from being laid.

THE ROSE-CHAFER.

There are scarcely any of the Chafers more beautiful than this. The upper parts of the female are of a shining green color, marked transversely on the wing-cases with a few short white or yellowish lines. The male is of a burnished copper-color, with a greenish cast. These insects are somewhat more than an inch in length. They are found on flowers, particularly on those of the rose and peony.

The grubs that produce this beetle feed underground, generally at the roots of trees, and never appear on the surface unless disturbed by digging, or some other accident. They are thought to be injurious to the gardener, by devouring the roots of his plants and trees. The female deposits her eggs in the middle of June. For this purpose she burrows into soft, light ground, hollowing out and forming for them a proper receptacle. When the operation is over, she returns to the surface and flies off, but seldom lives more than two months afterwards. The grubs are produced in about fourteen days, and immediately seek out for food, which the parent always takes care to have near the place where she lays her eggs. As soon as they have attained sufficient strength, the young grubs separate, each burrowing in a different direction, in search of roots. They remain four years in this state, annually changing their skin till they become of full growth, when they are of a cream-color, with brown head and feet. During winter they eat but little, if at all, and they retire so deeply into the ground as to avoid the effects of the frost.



ROSE-CHAFER.

About the month of March, at the end of the fourth year, the grub forms a case of earth, about the size of a walnut, somewhere near the surface, within which it changes into a chrysalis. In this state it remains till the beginning of May, when it bursts out a perfect Chafer. This is at first of a light green color, and very tender; but soon acquires its proper hardness and strength.

When the insect is touched it emits a fetid moisture, which, no doubt, is a mode of defence against the attacks of its enemies.

The structure of the alimentary canal in insects is wonderfully diversified; not only are differences discoverable as we pass from species to species, but the same individual will often be found to have a canal quite different, according as it is examined in its grub or perfect state.

THE PILL CHAFER.

In its habits of life the Pill Chafer is one of the most remarkable of the Beetle tribe. It comes forth in April, and is to be seen abroad until about September, when it disappears. Its almost constant employment, in which it is indefatigable, is in the different operations necessary to continue its species. It constructs a proper nidus for its eggs, by forming round pellets of dung, in the middle of each of which it deposits an egg. These, in September, the insect conveys to the depth of about three feet into the ground. Here they remain till the approach of spring, when the grubs burst their shells, and find their way to the surface of the earth.



PILL CHAFER.

"I have attentively admired their industry, and their mutually assisting each other (says Catesby) in rolling these globular balls from the place where they made them, to that of their interment, which is usually at the distance of some yards, more or less. This they perform breach foremost, by raising their hind parts, and forcing along the ball with their hind feet. Two or three of them are sometimes engaged in trundling one ball, which from meeting with impediments, on account of the unevenness of the ground, is sometimes deserted by them. It is, however, attempted by others with success, unless it happen to roll into some deep hollow or chink, where they are constrained to leave it; but they continue their work by rolling off the next ball that comes in their way. None of them seem to know their own balls, but an equal care for the whole appears to affect all the community. They form these pellets while the dung remains moist; and leave them to harden in the sun before they attempt to roll them. In their moving of them from place to place, both they and the balls may frequently be seen tumbling about over the little eminences that are in their way. They are not, however, easily discouraged; and, by repeating their attempts, usually surmount the difficulties."

Catesby says also that these insects find out their subsistence by the excellence of their *noses*, which direct them in their flight to newly-fallen dung, on which they immediately go to work, tempering it with a proper mixture of earth. So intent are they always upon their employment, that, though handled or otherwise interrupted they are not to be deterred, but immediately on being freed persist in their work without any apprehension of danger.

They are so strong and active as to move about, with the greatest ease, things that are many times their own weight. Dr. Brickell was supping one evening in a planter's house of North Carolina, when two of these insects were conveyed, without his knowledge, under the candlesticks. A few blows were struck on the table, and to his great surprise the candlesticks began to move about apparently

without any agency; and his surprise was not much lessened, when, on taking one of them up, he discovered that it was only a Chafer that moved it.

OF THE LUCANUS, OR STAG-BEETLE TRIBE.

The antennæ of the Stag-beetles have a club-shaped extremity, divided into short, comb-like leaves. The jaws are toothed, and extend so far beyond the head, as to resemble horns. Under the lip there are two palpi or feelers, so thickly covered with hair, as to appear like tufts.

Stag-beetles are chiefly found in rotten and half-decayed wood, and under the bark of trees.

THE GREAT STAG-BEETLE.

These insects are very common in oak and willow trees. In the stumps or about the branches of these they remain concealed during the day; flying abroad and feeding on the leaves only in the evening. The month of July is the time during which they are principally seen. The males, in particular, have great strength in their mandibles or jaws. With these they are able to pinch very severely. Linnæus informs us, that they feed on the liquor that oozes from the trunks or branches of trees; and it has been conjectured that the jaws are used either in obtaining their food, or in fixing themselves firmly to the spot while they eat. It is said that Stag-beetles may be kept alive for a considerable time, if supplied with the fresh leaves of oak or willow, or with sweetened water.



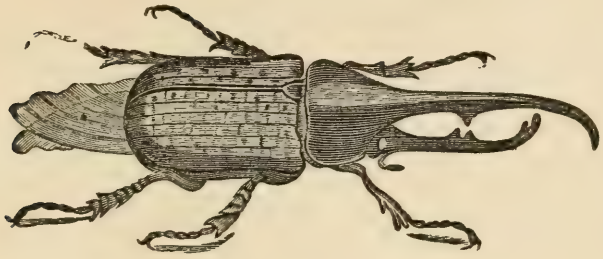
GREAT STAG-BEETLE.



GREAT STAG-BEETLE, WITH WINGS FOLDED.

In Germany there is a popular notion, that these insects are some-

times known, by means of their jaws, to carry burning coals into the houses; and that, in consequence of this, dreadful fires have been occasioned.

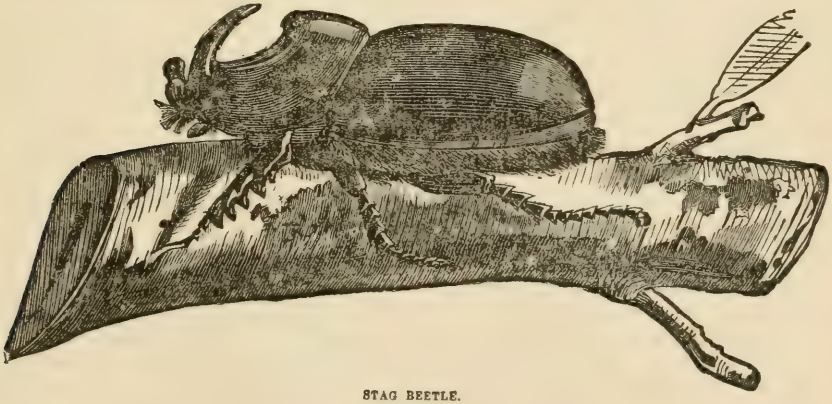


HERCULES BEETLE.

It is a singular circumstance respecting these insects, that I have frequently found several of their heads near together, and alive, while the trunks and abdomens were nowhere to be seen; sometimes only the abdomens were gone, and the heads and trunks were left. How this takes place, I never could discover. An intimate and intelligent friend of mine supposes, however, that it must have been in consequence of severe battles which at times take place among these, the fiercest of the insect tribes: but their mouths not seeming formed for animal food, he is at a loss to conjecture what becomes of the abdomens. They do not fly until most of the birds have retired to rest; and indeed, if we were to suppose that any of these devoured them, it would be difficult to say why the heads or trunks should alone be rejected.



RHINOCEROUS BEETLE.



STAG BEETLE.

The females deposit their eggs in decayed or worm-eaten trees. The larvæ, which are round and whitish, with rust-colored head and legs, are nourished under the bark. In this state they pass six years. When about to undergo their change into a chrysalis, each insect forms a hard and solid ball, of the form of an egg, and sometimes as large as the hand. When the perfect insect issues forth, it is at first quite soft.

OF THE DERMESTES TRIBE.

In their perfect state, these insects are generally extremely timid. The moment they are threatened with danger, they stop in their course, draw up their antennæ and feet, and continue in a feigned state of death, until the object of their fear is removed.

The larvæ or maggots, subsist chiefly on the bodies of dead animals, dried skins, the bark of trees, and old wood. Some of them are very destructive to books and furniture.

THE BACON DERMESTES.

These insects are produced from maggots which are bred and nourished in bacon, or in other animal substance. To collections of dried and preserved animals, they are sometimes particulary injurious. They change their skins several times. These skins continue stretched out, as if blown up, and are in appearance like the little animals which cast them.

OF THE PTINUS, OR BORER TRIBE.

In a larva state, these insects are chiefly found in the trunks of decayed trees, and in old wood, where they make holes as round as though they had been formed with a gimlet. They are nearly allied to the Dermestes, but differ from those insects in the form of their antennæ, mandibles, and legs.

In the spring of the year, we see these insects issuing from wood where the *pupæ* have been enclosed; and, attracted by the rays of the sun, run along upon the window-frames, beams, or wainscot. Like the Dermestes, they feign themselves to be dead when touched; burying their head under the thorax, drawing in the legs, and concealing entirely their antennæ between the head and upper borders of the thorax, they present only the appearance of an inanimate substance.

The devastations which their larvæ commit are very great. Old moveables of wood, worm-eaten, and full of cylindrical holes, indicate, at the same time, the work and the habitations of these insects. By means of two strong and powerful jaws, they gnaw the wood on which they feed; and this, after passing through their bodies, is deposited in small grains of very fine powder, which fills up the holes behind them, as the little creatures pass onward. They increase their dwellings as they themselves increase in size; and when they have attained their full dimensions, they weave a nidus, of a kind of silk issuing from their body, in the bottom of their hole. In this they change to a pupa state, and afterwards to perfect insects.

There are numerous species. It will not be necessary for me to speak of more than one.

THE DEATH-WATCH PTINUS.

Notwithstanding its smallness, this creature is often the cause of serious alarm among the superstitious, from the noise which it makes, at a certain season of the year, resembling the ticking of a watch. From this it has its name; for, whenever this faculty is exerted, it is esteemed portentive of death to some one of the family in the house where it is heard. The philosopher and the naturalist may smile at a notion thus absurd; yet Sir Thomas Brown has remarked, with great earnestness, that the man, "who could eradicate this error from the minds of the people, would save from many a cold sweat the meticulous heads of nurses and grandmothers."

It is generally in the advanced state of spring, that these insects commence their noise. This is nothing more than a call or signal, by which they are mutually attracted to each other; and it may be considered as analogous to the call of birds. It is not occasioned by the voice, but by the insect's beating on any hard substance with the shield or fore-part of its head. The general number of successive distinct strokes, is from seven to nine or eleven. These are given in tolerably quick succession, and are repeated at uncertain intervals; and in old houses, where the insects are numerous, they may be heard during warm weather almost every hour in the day. The noise exactly resembles that made by beating with a nail upon the table.

This insect, from its obscure grayish brown color, nearly resembling that of decayed wood, is difficult to discover: it is consequently not always easy to say from what exact spot the sound proceeds. Mr. Stackhouse observed carefully the manner of its beating. He says, the insect raises itself on its hind legs, and, with the body somewhat inclined, beats its head with great force and agility against the place on which it stands. One of them, on a sedge-bottomed chair, exerted so much force, that its strokes were impressed and visible in the exterior coat of the sedge, for a space equal to that of a silver penny. Mr. Stackhouse took this insect and put it into a box. On the following day he opened the box, and set it in the sun. The insect seemed very brisk, and crept about with great activity on the bits of sedge and rotten wood, till at last, getting to the end of the pieces, it extended its wings, and was about to take flight. He then shut down the lid, when it withdrew them, and remained quiet. He kept it by him about a fortnight.

The idea of taming this little animal may appear absurd: it has, however, been so much familiarized, as to be made to beat occasionally. On taking it out of its confinement, and beating with the nail or the point of a pen on a table or board, it will answer the beats very readily, and will even continue to repeat its efforts as long as it is required.

Dr. Derham kept a male and female together in a box for about three weeks; and by imitating their noise, he made them beat when-

ever he pleased. At the end of this time one of them died; and soon afterwards the other gnawed its way out and escaped

This insect, which is the real Death-watch of the vulgar, emphatically so called, must not be confounded with a wingless insect, not much unlike a louse, which makes a ticking noise like a watch, but which, instead of beating at intervals, continues its noise for a considerable length of time without intermission. The latter belongs to a tribe very different from this: it is the *Termes Pulsatorium* of Linnæus, and will be hereafter described.

OF THE SILPHÆ, OR CARRION BEETLES.

These insects are chiefly found, both in a perfect and larvæ state, in the half-decayed and putrid bodies of animals. Their antennæ are clavate, and the club is perfoliate. The elytra or wing-cases are margined; and the head is prominent. The thorax is somewhat flattened, and also margined.

THE BURYING SYLPH.

The best account that I have seen of the habits and economy of these interesting insects, is that written by M. Gleditsch, a well known writer on natural history. This gentleman had, at different times, observed, that Moles which had been left upon the ground after they had been killed, very unaccountably disappeared. He therefore was determined, if possible, to ascertain by experiment, what could be the cause of this singular occurrence.

On the twenty-fifth of May, he accordingly obtained a dead mole, which he placed on the moist, soft earth of his garden, and in two days he found it sunk to the depth of four fingers' breadth into the earth: it was in the same position in which he had placed it, and its grave corresponded exactly with the length and breadth of its body. The day following this grave was half filled up; and he cautiously drew out the mole, (which exhaled a horrible stench,) and found, directly under it, little holes, in which were four Beetles of the present species. Discovering at this time, nothing but these Beetles, he put them into the hollow, and they quickly hid themselves among the earth. He then replaced the mole as he found it, and, having spread a little soft earth over it, left it without looking at it again for the space of six days. On the twelfth of June he again took up the same carcass, which he found in the highest state of corruption, swarming with small, thick, whitish worms, that appeared to be the family of the Beetles. These circumstances induced him to suppose that it was the Beetles that had thus buried the mole, and that they had done this for the sake of lodging in it their offspring.

Mr. G. then took a glass vessel, and half filled it with moist earth into this he put the four Beetles with their young-ones, and they im-

mediately concealed themselves. This glass, covered with a cloth, was placed on the open ground, and in the course of fifty days, the four Beetles interred the bodies of *four* frogs, *three* small birds, *two* grasshoppers, and *one* mole, besides the entrails of a fish, and two small pieces of the lungs of an Ox.

Of the mode in which they performed this very singular operation, the following is an account: A Linnet that had been dead six hours was placed in the middle of the cucurbit: in a few moments the Beetles quitted their holes, and traversed the body. After a few hours, one pair of the Beetles only was seen about the bird: the largest of these was suspected to be the female. They began their work by hollowing out the earth from under the bird. They arranged a cavity the size of the bird, by pushing all around the body the earth which they removed. To succeed in these efforts, they leaned themselves strongly upon their collars, and, bending down their heads, forced out the earth around the bird like a kind of rampart. The work being finished, and the bird having fallen into the hollow, they covered it, and thus closed the grave.

It appeared as if the bird moved alternately its head, its tail, its wings, or feet. Every time that any of these movements were observed, the efforts that the Beetles made to draw the body into the grave, which was now nearly completed, might be remarked: in effecting this, they jointly drew it by its feathers below. This operation lasted full two hours, when the smallest or male Beetle drove away the female from the grave, and would not allow her to return, forcing her to enter the hole as often as she attempted to come out of it.

This Beetle continued the work alone for at least five hours; and it was truly astonishing to observe the great quantity of earth which he removed in that time: but the surprise of Mr. G. was much augmented, when he saw the little animal stiffening its collar, and exerting all its strength, lift up the bird, make it change its place, turn, and, in some measure, arrange it in the grave that it had prepared; which was so spacious, and so far cleared, that he could perceive exactly under the bird, all the movements and all the actions of the Beetle.

From time to time, the Beetle coming out of its hole, mounted upon the bird, and appeared to tread it down; then, returning to the charge, it drew the bird more and more into the earth, till it was sunk to a considerable depth. The Beetle, in consequence of this uninterrupted labor, appeared to be tired: leaning its head upon the earth, it continued in that position nearly an hour, without motion; and it then retired completely underground.

Early in the morning the body was drawn entirely underground, to the depth of two fingers' breadth, in the same position that it had when laid on the earth; so that this little corpse seemed as if it were laid out on a bier, with a small mount or rampart all round, for the purpose of covering it. In the evening the bird was sunk about half a fingers' breadth deeper in the earth; and the operation was continued for nearly two days more, when the work obtained its final completion.

A single Beetle was put into the glass cucurbit, with the body of a

mole, and covered, as before, with a fine linen cloth. About seven o'clock in the morning, the Beetle had drawn the head of the mole below; and, in pushing the earth backward, had formed a tolerably high rampart around it. The interment was completed in this instance, by four o'clock in the afternoon, a space of time so short, that one could scarcely have imagined the operation possible, by so small a creature, without any assistance, and considering that the body of the mole must have exceeded the insect in bulk and weight at least thirty times.

While engaged in these experiments, a friend, who wished to dry a Toad in the shade, fixed it to a stick which he stuck into the ground. When it began to putrefy, the Beetles. allured by the smell, having loosened the end of the stick that was fixed in the earth, brought it to the ground, and they then interred both the Toad and the stick.

The interment of these animals, which generally takes place from about the middle of April to the end of October, has been sufficiently proved to be not merely for food, but as a proper nidus for the eggs of the insects, and to nourish the young family of grubs that proceeds from them. If they wanted them for food only, they would no doubt consume them above ground; but in the continuation of the species, it is necessary to have them below, since, otherwise, Foxes, Ravens, Kites, and other carnivorous animals, would seize on the bodies, and, along with them, would swallow the grubs of the Beetles.

OF THE COCCINELLA, OR LADY-BUG TRIBE.

THE principal food of these insects consists of aphides or plant-lice, by destroying which, in immense numbers, they render a most important service to mankind.

Their antennæ are club-shaped, and the club is solid. The thorax and elytra are margined. The body is hemispherical, and the abdomen flat. The larvæ or grubs of some of the species, have their bodies covered with scaly plates; others have hairs on the upper parts of the body, and on the sides; and there are others still different.

THE SEVEN-SPOTTED AND TWO-SPOTTED LADY-BUG.

Few insects are either more common or better known than these. They are usually found on plants, where they repose with the legs concealed under their body, and their antennæ beneath the head. In winter they hide themselves and become torpid, and they again appear abroad in the spring.

The females deposit their eggs on such plants as abound with aphides or plant-lice. The larvæ have each six feet, and a conical body divided into twelve rings. At the extremity of the posterior ring, there is a kind of fleshy teat, by which they are able to adhere to solid bodies, and firmly to support themselves while employed in seizing

and devouring their food. They are so extremely voracious, that when other food is scarce, they will sometimes eat even their own species.

In order to change into the *pupa* state, they attach themselves by their fleshy feet, to the leaves or branches of trees. Here they drop a small quantity of glutinous liquor, which fixes them to the spot, and, in a position contrary to that of the plane to which they adhere. Little by little their body contracts, and at the end of two or three days they undergo their transformation. In freeing themselves from their skin, they make it pass towards the hinder part of their body, where it continues like a little pellet.

The *pupæ* are beautifully spotted with black and other colors. The only motion observable in them, is that of alternately elevating and depressing their body, particularly if touched. They finally quit their envelope in about six days after this last change. When they first come into the world as perfect insects, their wing-cases are of a yellowish white color, soft and flexible. These soon harden by their contact with the external air; and shortly afterwards assume their proper spots and colors.

Lady Bugs have in France the name of *Bête à Dieu*, *Vache-à-Dieu*, and *Bête de la Vierge*.

OF THE CURCULIO, OR WEEVIL TRIBE.

THE *larvæ* of the Weevils, like those of other coleopterous insects, have each six legs and a scaly head. They have a resemblance to oblong soft worms. Some of them infest granaries, where, from their numbers and voracity, they often commit great ravages among the corn: some live in fruits, the insides of artichokes, thistles, and other plants; and others devour the leaves of trees and vegetables.

One division of the Weevils feed on trees and shrubs, inserting their beaks into the tender branches, and by this means extracting their juices. The *Curculio alliariæ* has been observed with its beak plunged into the twig of a crab-tree, as far as the place whence the antennæ arise. Another division feed solely on plants. Others live on grain, wood, and on some of the species of fungi; and a few under the surface of the earth.

THE CORN WEEVIL.

The Corn Weevil is well known to most farmers, from the devastation that it makes in their granaries. The parent insect lays its eggs in grains of corn, probably one in each grain. Here the larvæ, on being hatched, continue for some time to live, and it is very difficult to discover them, as they lie concealed within. They increase their size, and with it their dwelling, at the expense of the interior or

farinacious parts of the grain on which they feed. Corn-lofts are often laid waste by these grubs, whose numbers are sometimes so great, as to devour nearly the whole of their contents. When the grub has attained its full size, it still remains within the grain, hidden under the empty husk. There, being transformed, it becomes a chrysalis; and, when it has attained its perfect state, it forces its way out.

It is no easy matter to discover by the eye the grains that are thus attacked, for, in external appearance, they are still large and full. If, however, they be thrown into water, their lightness soon detects them.

To rid a granary of these destructive insects, it has been recommended to farmers to spread their corn in the sun, when the Weevils will creep out of their holes; and by often stirring the corn while in this situation, it is supposed they may be completely expelled. It is also said that they may be destroyed by strewing boughs of elder, or branches of henbane, among the corn. In a late Paris paper, a gentleman says, that about the month of June, when his granaries and barns, that had been much infested by Weevils, were all empty, he caused a number of the hills of the large ants to be collected in bags, and placed in different parts about them. The ants immediately attacked the Weevils that were on the walls and other parts, and destroyed them so completely, that in a very short time not a single Weevil was to be seen; and since that period, he says, they never appeared on his premises.

OF THE CERAMBIX, OR CAPRICORN TRIBE.

THE insects of the present tribe are among the most beautiful that are known. Their antennæ are frequently longer than the body. Many of the species diffuse a strong smell, perceptible at a great distance; and some of them, when seized, emit a sort of cry, produced by the friction of the thorax on the upper part of the abdomen and wing-cases.

Their *larvæ* are found in the inner parts of trees, through which they bore, feeding on and pulverizing the substance of the wood. They are transformed into perfect insects in the cavities they thus make, and never issue from their retreats till they have attained their perfect state.

OF THE LAMPYRIS, OR GLOW-WORM TRIBE.

THE name of this insect is derived from the luminous appearance of the posterior part of its abdomen. The males are all winged, but most of the females are destitute of wings. In some of the species the males are not luminous. The larvæ, which feed chiefly on plants and leaves, nearly resemble the females in appearance.

There are about sixty known species, inhabitants of different parts of the world.

THE COMMON GLOW-WORM.

During the summer season these insects are observed after sun-set in meadows, by road sides, and near bushes.

They are chiefly to be seen during the months of June and July. In the day-time they conceal themselves amongst the leaves of plants.



COMMON GLOW-WORM.

Each sex is luminous, but in the male the light is less brilliant than in the female, and is confined to four points, two of which are situated on each side of the two last rings of the abdomen. The utility of the bright light of the females is supposed to consist in attracting the attention of the males during the dark, when, only, they are able to render themselves conspicuous. They always become much more lucid when they put themselves in motion. This would seem to indicate that their light is owing to their respiration; in which process, it is probable, phosphoric acid is produced by the combination of oxygen gas with some part of the blood, and that a light is given out through their transparent bodies by this slow internal combustion. By contracting themselves, the insects have a power of entirely withdrawing it: when they are at rest, very little light is to be seen M. Templer, who made many observations on these insects, says that he never saw a Glow-worm exhibit its light at all, without some sensible motion either in its body or legs. This gentleman, when the light was most brilliant, fancied that it emitted a sensible heat.

If the insect be crushed, and the hands or face be rubbed with it, they contract a luminous appearance, similar to that produced from phosphorus. When a Glow-worm is put into a phial, and the phial is immersed in water, a very beautiful irradiation will be found to take place.

The female Glow-worms lay a great number of eggs on the turf or plants on which they live. These eggs are somewhat large for the size of the insects, of a round shape, and lemon color. When first deposited, they are covered with a yellow, viscous matter, which serves to fix them to the plant.

When full grown the larvæ are about an inch long, and so nearly resemble the female in appearance, that it is a difficult matter to distinguish the sexes. When they change to their *pupa* state, the skin generally splits on the middle of the head and back, and leaves an opening sufficient to give passage to the whole body.

As soon as the larvæ is completely disengaged from the skin, it curves its body into an arc, and is then in a *pupa* state. It still has much resemblance to the larva. The only indication of life now, is its curvature, from time to time, downwards, and its moving occasionally from side to side.

OF THE ELATER, OR SKIPPER TRIBE.

THE Elaters fly with great facility, and when thrown upon their backs, they are able to recover their position without using their feet: for this purpose the thorax terminates in a strong elastic spine, which is placed in a cavity of the abdomen. The insects, when upon their back, raise up the middle part of their body, so as to leave only the head and tail in contact with the plane on which they lie. The spine of the thorax is by this motion brought considerably out of its lodgment, and made to press against the side. Being from this position again slipped into its groove, with all the force the creatures are able to exert, the thorax and abdomen come together with so sudden a jerk, as to raise the body from the plane, and enable them to spring round.



SKIPPER.

The larvæ live and undergo their changes in the trunks of decayed trees.

OF THE DYTISCUS, OR WATER BEETLE TRIBE

THE bodies of these insects are admirably formed for passing through the water with as little impediment as possible, being nearly boat-shaped, and on the surface perfectly smooth. They inhabit ponds and ditches, but occasionally fly in search of other waters. The males are distinguished from the females, by having a horny concave flap or shield on the forelegs. The hind legs in both sexes are peculiarly adapted for the aquatic residence of the insects, being furnished on the inner sides with a series of long and close-set filaments, so as somewhat to resemble fins. In the large species, the elytra or wing-cases of the males are smooth, and those of the females furrowed.

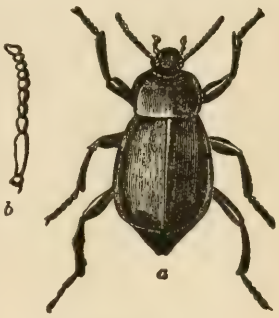
The larvæ are extremely voracious, feeding on other aquatic insects, on worms, and even on young fish. They continue in this state about two years and a half; and when about to change into *pupæ*, they form a convenient cell, and secrete themselves for the purpose in the banks or amongst the weeds.

THE MARGINED WATER BEETLE.

Although water is the principal element in which these insects reside, they are perfectly amphibious. They may occasionally be found in all fresh waters; but are most frequently seen either in such as are stagnant, or where the stream is extremely low.

They are predatory and very voracious, devouring, in great numbers, not only other water-insects, but also those of the land. They seize their prey in their forelegs, and with these carry it to the mouth

Although they are able to continue immersed for a great length of time, yet it is necessary for them to rise occasionally to the surface of the water, in order to breathe. They swim with great celerity; and, in flying, they make a humming or droning noise, like other Beetles.



WATER-BEETLE.

The larvæ have powerful jaws, and six long legs. At the posterior part of their body, which tapers towards the extremity, there are two small, slender processes, situated somewhat obliquely, and moveable at the base. It is by means of these that the larvæ suspends itself at the surface of the water, for the purpose of respiring the air of the atmosphere, which it does through two small cylindrical tubes, situated at the extremity of the tail.

When the larvæ change their place in the water, or seek to escape the attack of their enemies, they give a prompt and vermicular motion to their body, and strike the water forcibly with their tail. They are excessively voracious, subsisting chiefly on the larvæ of dragon-flies, ephmeræ, gnats and other insects. When the time of their transformation approaches, the larvæ quit the water, and enter the earth near the banks of the ponds or ditches which they frequent. Here they form a cavity in the form of an oval case, in which they undergo their change into *pupæ*, and afterwards into winged insects.

Thus these little creatures are aquatic animals in the larvæ state, become terrestrial under the form of *pupæ*, and amphibious when perfect insects.

OF THE CARABUS, OR GROUND BEETLE TRIBE.

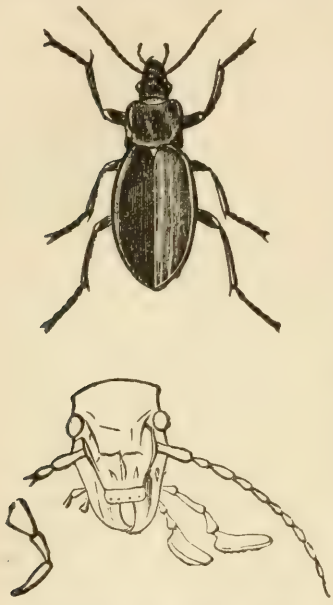
THESE insects are very active and voracious, devouring the larvæ of the other tribes, and indeed all the smaller animals they can overcome. They conceal themselves under stones, or moss, and particularly under such as happen to be near the roots of old trees. Frequently, however, they are to be seen running about on the roads and fields. Some of the species are destitute of wings.

The larvæ are found chiefly in decayed wood, or under the ground, where they undergo their various changes.

THE BOMBARDIER, OR EXPLODING BEETLE.

This insect conceals itself among stones, and seems to make little use of its wings. When it moves it is by a sort of jump; and, when it is touched, we are surprised with a noise resembling the discharge of a musket in miniature, during which a blue smoke may

be seen to proceed from its extremity. The insect may at any time be made to play off its artillery, by scratching its back with a needle. If we may believe Rolander, who first made these observations, it can give twenty discharges successively. A bladder placed near its posterior extremity, is the arsenal that contains its store. This is its chief defence against its enemies; and the vapor or liquid that proceeds from it is of so pungent a nature, that if it happen to be discharged into the eyes, it makes them smart as though brandy had been thrown into them. The principal enemy of the Bombardier is another insect of the same tribe, but three or four times its size. When pursued and fatigued, the Bombardier has recourse to this stratagem: he lies down in the path of his enemy, who advances with open mouth to seize him: but, on the discharge of the artillery, the enemy suddenly draws back, and remains for awhile confused, during which the Bombardier conceals himself in some neighboring crevice; but, if not lucky enough to find one, the other returns to the attack, takes the insect by the head, and tears it off.



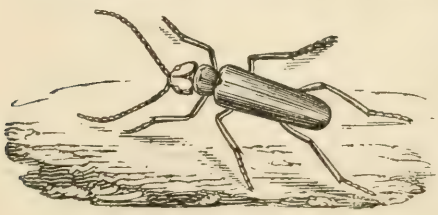
BOMBARDIER, WITH HEAD AND ANTENNA MAGNIFIED.

OF THE LYTTA TRIBE.

THE antennæ of the Lyttæ are of equal thickness throughout; the feelers are four in number, unequal in size, and the hind ones are clavate. The thorax is roundish: the head inflected and gibbous. The shells are soft, flexile, and as long as the abdomen.

THE BLISTERING LYTTA, OR SPANISH-FLY.

In the south of France, in Spain, and in Italy, these insects are found in great abundance about the time of the summer solstice. They feed on the leaves of trees and shrubs, particularly on those of the privet, lilac, woodbine, elder, poplar, and ash. On the last named trees they are sometimes seen in such swarms, as,



THE BLISTERING LYTTA.

in a little while to deprive them entirely of their verdure. They always prefer the young trees to old ones. When collected in great numbers their odor becomes very disagreeable, and is perceptible even to a considerable distance.

In order to collect these insects, a cloth is extended round the foot of the tree, and they are shaken upon it. They are then taken up, tied in a bag, and killed with the vapors of hot vinegar. After this they are dried in the sun, and placed in boxes for use. The fresher the insects are, the more stimulating is the action of their blistering properties. It is consequently necessary to collect them as shortly as possible after they have attained their perfect state.

OF THE FORFICULA, OR EARWIG TRIBE.

In this tribe the antennæ are bristle-shaped; and the feelers unequal and thread-shaped. The wing-cases are half the length of the abdomen, and have the wings folded up under them, somewhat in the manner of a fan. The tail is armed with a forceps.

The Earwigs undergo only a semi-metamorphosis, differing in external appearance very little in the three states

THE COMMON EARWIG.

It may not perhaps be generally known that the Earwig possesses wings which are both large and elegant, and that one of these, when extended, will cover nearly the whole insect. The elytra or wing-cases, are short, and extend not along the whole body, but only over the breast. The wings are concealed beneath these, and are somewhat of an oval shape. There is great elegance in the manner in which the insect folds them beneath its elytra. They are first closed up lengthways from a centre close to the body, like a fan; and afterwards refolded across in two different places, one about the middle of the membrane, and the other at the centre, from which the first folds proceeded. By this means the wing is reduced into a small compass, and proportioned to the size of the case under which it is to lie.



THE EARWIG.

It is a circumstance extremely singular, that, unlike those of most others of the insect tribe, the eggs are hatched and the young Earwigs are fostered by the parent. At the beginning of the month of June, M. de Geer found under a stone a female Earwig, accompanied by many little insects, which evidently appeared to be her own young. They continued close to her, and often placed themselves under her belly, as chickens do under a hen. He put the whole into

a box of fresh earth: they did not enter the earth, but it was pleasing to observe how they thrust themselves under the belly, and between the legs of the mother, who remained very quiet, and suffered them to continue there sometimes for an hour or two together. To feed them this gentleman gave them a piece of a very ripe apple: in an instant the old one ran upon it, and ate with a good appetite; the young-ones also seemed to eat a little, but apparently with much less relish.

The Earwig, though in its nature extremely harmless, except to fruits and vegetables in our gardens, has become a victim to human cruelty and caprice, originating in a notion that it introduces itself into the ears, and thence penetrates to the brain, and occasions death. It is to be wished that females, who but too commonly lay aside all ideas of tenderness at the very sight of it, would be convinced that the wax and membranes of the ears, are a sufficient defence against all the pretended attacks of the Earwig upon this organ.

Our gardeners have, it is true, some room for complaint. It lives among flowers and frequently destroys them; and, when fruit has been wounded by flies, the Earwigs also generally come in for a share. In the night they may occasionally be seen in amazing numbers upon lettuces and other esculent vegetables, committing those depredations that are often ascribed to snails or slugs. The best mode, therefore, of destroying them, seems to be, to attend the garden now and then in the night, and to seize them while they are feeding.

The bowl of a tobacco-pipe, and the claws of lobsters stuck upon sticks that support flowers, are the usual methods by which they are caught, as, in the day-time, they creep into holes and dark places. Placing hollow reeds behind the twigs of wall-trees, is also a good mode, if they be examined and cleared every morning. But at a midnight visit more may be done in an hour, than by any of the other means in a week.

The male and female Earwig differ considerably in their anal forceps; those of the female being less curved and destitute of a tooth-like process, which is observed on the inner side at the base of the forceps of the male.

There are in all five different species of Earwigs, one of which called *Labia* is very common, and of smaller size than the one we have just described. It is found about hot-beds and dung-hills, and differs from the common Earwigs somewhat in its habits as well as in its structure.

The common name given to the Earwig has been variously explained. In Scotland it is called *Coachbell*. It has been suggested that *Earwig* may be a corruption of *Earwing*, from the resemblance in shape that its wing bears to a human ear—an explanation which does not seem improbable.

HEMIPTEROUS INSECTS.

OF THE BLATTA, OR COCK-ROACH TRIBE.

Some of the species of Blatta, are destitute both of wings and wing-cases. Their larvæ differ but little in their general appearance from the perfect insects. In a *pupa* state they have, between the thorax and the abdomen, two broad and flat rings, which cover much of the breast, and from which place the wings afterwards appear.

A few of these insects live in houses, and others conceal themselves in holes in the ground.

THE COMMON, AND THE AMERICAN COCK-ROACH.

Both these insects live in houses, where they are sometimes very troublesome, from their knawing and devouring eatables, leather, cloths, woolen, and other things to which they have access. The common species are extremely agile, and run very swiftly. During the day-time they conceal themselves in holes of walls and clefts of the floors, and issue forth only in the dark, for the purposes of plunder and devastation. The moment they perceive a light, they endeavor to escape into the places of their retreat. The smell of these insects is so powerful and unpleasant, that if they only run over provisions, they frequently render them very nauseous. They are furnished with wings, but their agility in other respects is so great, that they seldom use them.

The Kakkerlac, or American Cock-roach, is very common. In some parts of South America, particularly in Surinam, it causes great devastation in the houses, by gnawing the stuffs, cloths, and wool, and devouring and injuring the provisions.

It is asserted by Reaumur, that the American Cock-roaches have for an enemy a large species of Sphex. He says, that when one of these Spheges encounters a Cock-roach, it seizes it by the head, pierces it with its sting, and then carries it to its hole, the nidus, where, no doubt, it has deposited its egg, and where the Cock-roach serves as nourishment for the future young-one.

OF THE MANTIS TRIBE.

Many of the insects of the present tribe have, at a little distance, so much the appearance of leaves of trees, that, in countries where they

are common, travellers have been struck with the singular phenomenon of what seemed to them animated vegetable substances. Their most prevailing color is a fine green, but many of them become brown after they are dead: some, however, are decorated with a variety of lively hues. The thorax in most of them is very long and narrow, and has the appearance of a footstalk to the large and rounded abdomen. Their manners also, in addition to their structure, are very likely to impose on the senses of the uninformed: they often remain on the trees for hours without motion: then suddenly rising, they spring into the air, and when they settle, they again appear lifeless. These seem to be stratagems, in order to deceive the cautious insects on which they feed.

THE ORATOR MANTIS.

This is a very widely-dispersed species, being found both in Europe, Asia, and Africa. From its perpetually resting on its hind legs, and erecting the fore paws close together, with a quick motion, as if in the action of praying, the country people, in various parts of the continent, consider it almost as sacred, and would not on any account injure it. "It is so divine a creature, (says the translator of Mouffet,) that if a child has lost its way, and inquires of the Mantis, it will point out the right path with its paw." Dr. Smith, however, informs us, in his tour on the continent, that, he received an account of this Mantis that seemed to savor little of divinity. A gentleman caught a male and female, and put them together in a glass vessel. The female, which in this, as in most other insects, is the largest, after a while devoured first the head and upper parts of her companion, and afterwards all the remainder of the body.



THE ORATOR MANTIS.

OF THE GRYLLUS, OR LOCUST TRIBE.

All these insects feed chiefly on vegetable substances. The *larvæ* and *crysalids* nearly resemble the perfect insects: they have six legs, are voracious and active, and reside principally in the ground.

Their heads are inflected, and armed with jaws that are furnished with foliform palpi, or feelers. The antennæ in some species are taper, in others thread-shaped. The wings are four, deflected and convolute: the lower ones plaited. The hind legs are formed for leaping; and on each side of the feet are two claws.

THE MOLE CRICKET.

This little creature, among the insect tribes, is a complete representative of the Mole. Its fore-feet are broad and strong, and in their formation and position bear a great resemblance to the fore feet of that animal. They are used for precisely the same purpose of burrowing under the surface of the ground, where the insect commonly resides; and so expertly does it use them, that it can penetrate the earth with even greater expedition than the Mole.

The female of this species forms a cell of clammy earth, about the size of a hen's egg, closed up on every side, and as large in the interior as two hazel nuts. The eggs, amounting to nearly a hundred and fifty, are white, and about the size of caraway comfits; they are carefully covered, as well to defend them from the injuries of weather as from the attacks of a species of black Beetles, which often destroy them. The female places herself near the entrance of the nest, and whenever the Beetle attempts to seize its prey, the guardian insect catches it behind, and bites it asunder. Nothing can exceed the care of these animals in the preservation of their offspring. Wherever a nest is situated, fortifications, avenues, and entrenchments surround it: there are also numerous meanders which lead to it, and a ditch encompasses the whole, which few other insects are capable of passing.

Mole Crickets are troublesome insects in hot-beds, where they make great havoc, by hacking and gnawing the roots of plants with their fore-feet, the ends of which are armed with teeth like a saw.

THE HOUSE CRICKET.

These busy little insects reside altogether in our dwellings, and intrude themselves on our notice, whether we wish it or not. They are partial to houses newly built; for the softness of the mortar enables them without difficulty to form their retreats between the joints of the masonry, and immediately to open communications with the different rooms. They are particularly attached to kitchens and bakehouses, as affording them a constant warmth.



THE HOUSE CRICKET.

"Tender insects, that live abroad, (says Mr. White,) either enjoy only the short period of one summer, or else doze away the cold, uncomfortable months in profound slumbers; but these, residing as it were in a torrid zone, are always alert and merry: a good Christmas fire is to them, what the heats of the dog-days are to others.

"Though they are frequently heard by day, yet their natural time of motion is only in the night. As soon as it becomes dusk the chirping increases, and they come running forth, and are often to be seen in great numbers, from the size of a flea to that of their full stature.

"As one would suppose from the burning atmosphere which they inhabit, they are a thirsty race, and show a great propensity for liquids, being frequently found dead in pans of water, milk, broth, or the like. Whatever is moist they are fond of, and therefore they often gnaw holes in wet woolen stockings and aprons, that are hung to the fire. These Crickets are not only very thirsty but very voracious; for they will eat the scummings of pots, yeast, salt, and crumbs of bread; and kitchen offal or sweepings of almost every description.

"In the summer they have been observed to fly, when it became dusk, out of the windows, and over the neigboring roofs. This feat of activity accounts for the sudden manner in which they often leave their haunts, as it does also for the method by which they come to houses, where they were not known before. It is remarkable, that many sorts of insects seem never to use their wings, but when they wish to shift their quarters and settle new colonies. When in the air, they move in waves or curves, like woodpeckers, opening and shutting their wings at every stroke, and thus are always rising or sinking. When their numbers increase to a great degree, they become pests, flying into the candles, and dashing into people's faces. In families, at such times, they are, like Pharoah's plague of Frogs, 'in their bed-chambers, and upon their beds, and in their ovens, and in their kneading troughs.'

"Cats catch Hearth-crickets, and playing with them as they do with mice, devour them. Crickets may be destroyed like Wasps, by phials half filled with beer, or any liquid, and set in their haunts; for, being always eager to drink, they will crowd in till the bottles are full." A popular prejudice, however, frequently prevents any attempts at their destruction; many people imagining that their presence is attended with good luck, and that to kill or drive them away will bring some misfortune on the family.

When these insects are running about a room in the dark, if they be surprised by a candle, they give two or three shrill notes. These seem a signal to their fellows that they may escape to their crannies and lurking holes, for the purpose of avoiding danger.

The organ that produces this noise, is a membrane, which in contracting, by means of a muscle and tendon placed under the wings of the insect, folds down somewhat like a fan. This, as it is always dry, yields, by its motion, a sharp and piercing sound. The noise may even be heard after the insect is dead, if the tendon be made to move. We are told that Crickets will live, and even continue their accustomed noise, for some time after their heads are cut off.

THE FIELD CRICKET.

Towards sun-set is the time when the Field Crickets begin to appear out of their subterraneous habitations. They are, however, so shy and cautious, that it is no easy matter to get a sight of them, for feeling a person's footsteps as he advances, they stop short in the

midst of their song, and retire backward nimbly into their burrows, where they lurk till all suspicion of danger is over.

It is remarkable, that, though these insects are furnished with long legs behind, and brawny thighs adapted for leaping, yet, when driven from their holes, they show no activity, but crawl along in so lifeless a manner as easily to be caught. And though they are provided with a curious apparatus of wings, yet they never exert them, even when there seems to be the greatest occasion. The males only make their shrill noise, perhaps out of rivalry and emulation; as is the case with many animals, which exert some sprightly note during their breeding-time.

THE MIGRATORY LOCUST.

Syria, Egypt, Persia, and almost all the south of Asia, are subject to a calamity as dreadful as volcanoes and earthquakes are to other countries, in being ravaged by those clouds of Locusts, so often mentioned by travellers. The quantity of these insects is incredible to all, who have not themselves witnessed their astonishing numbers: the whole earth is covered with them, for the space of several leagues. The noise they make in browsing on the trees and herbage, may be heard at a great distance, and somewhat resembles that of an army foraging in secret. The Tartars themselves are a less destructive enemy than these animals. One would imagine, wherever they have been seen, that fire had followed their progress. Wherever their myriads spread, the verdure of the country disappears, as if a curtain had been removed: trees and plants are stripped of their leaves, and are reduced to their naked boughs and stems; so that the dreary image of winter succeeds, almost in an instant, to the rich scenery of the spring. When these clouds of Locusts take their flight, the heavens may sometimes literally be said to be obscured by them. Happily this calamity is not frequently repeated; for it is the inevitable forerunner of famine. The inhabitants of Syria have remarked, that Locusts are always increased by too mild winters, and that they contantly come from the desert of Arabia. From this observation it is easy to conceive, that, the cold not having been rigorous enough to destroy their eggs, they multiply suddenly; and, the herbage failing them in the immense plains of the desert, innumerable legions issue forth. When they make their first appearance on the frontiers of the cultivated country, the inhabitants attempt to drive them off, by raising large clouds of smoke; but frequently their herbs and wet straw fail them. They then dig trenches, where numbers of the insects are buried: but the most efficacious destroyers are the south and south easterly winds, and the Locust-eating Thrushes. These birds follow them in numerous flocks like Starlings, and not only greedily devour

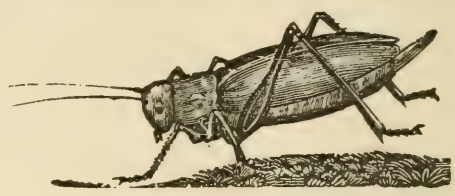


THE MIGRATORY LOCUST.

them, but kill as many as they can: accordingly they are much respected by the peasants, and nobody is allowed to shoot them. As to the southerly and south-easterly winds, they drive with violence these clouds of Locusts over the Mediterranean, where such quantities of them are sometimes drowned, that, when their bodies are thrown on the shore, they infect the air for several days.

OF THE CICADÆ IN GENERAL.

THESE insects are found in various parts both of the New and Old Continent, where they subsist almost wholly on the leaves of trees and on other vegetable substances. They are furnished with a hard and horny proboscis or tube, in which is contained a very slender sucking-pipe. The former is not much unlike a gimlet in form, and is used by them in boring through the bark of trees, for the purpose of extracting their juices. With this proboscis they also bore holes in the small and tender twigs of the exterior branches, in which they deposit their eggs, sometimes to the amount of six or seven hundred. Each cell does not contain more than from twelve to twenty, so that by this means they often do much damage to the trees which they frequent.



THE CICADA, OR GRASSHOPPER.

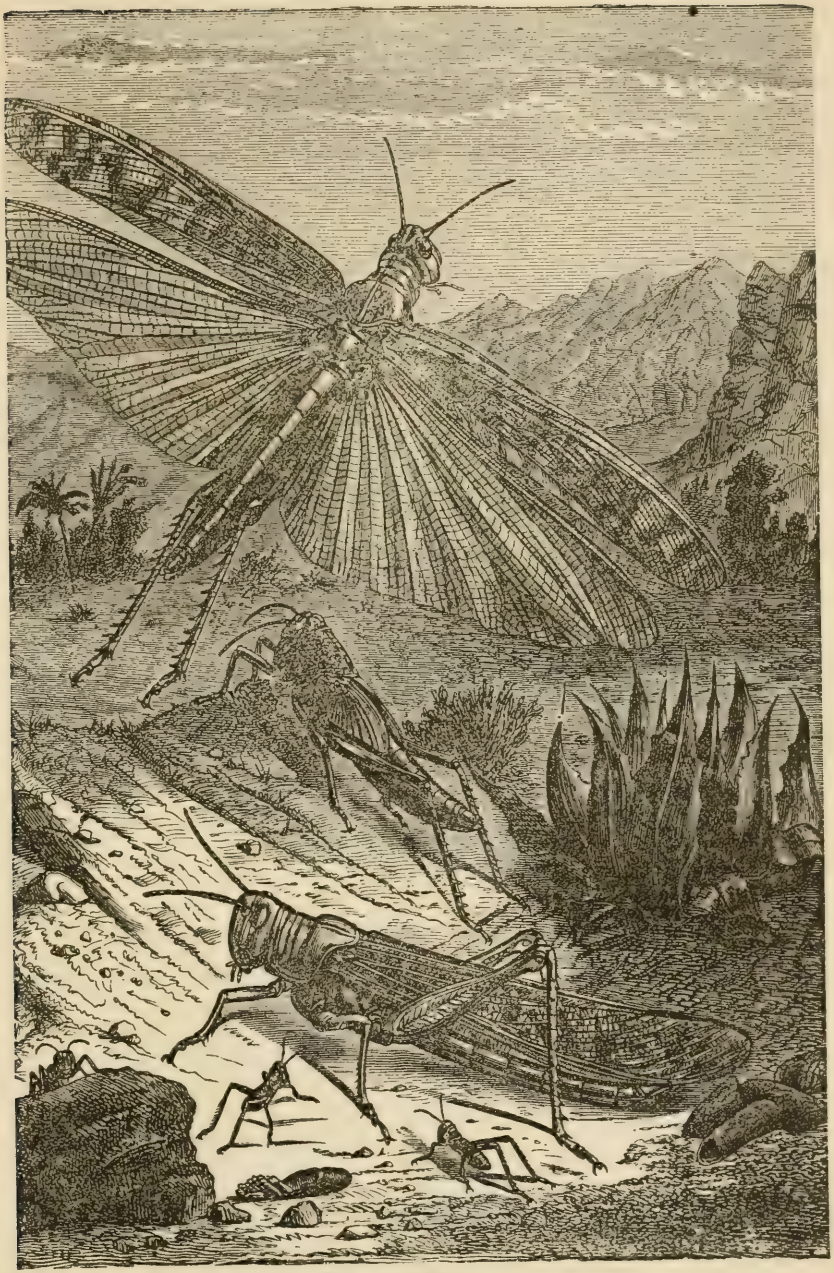
The *chrysalids* of these insects are not torpid, like those of many others; but have six legs, and differ from the parent, in having only the rudiments of wings. They are exceedingly active, and in general run and leap about upon the trees with great sprightliness.

The Cicadæ of the hottest climates make the loudest noise. From the papers of Mr. Smeathman, who resided a considerable time in Africa, it appears that some are so loud, as to be heard to the distance of half a mile; and that the singing of one of them in a room, will immediately silence a whole company. Professor Thunburg says, that one of the Javanese species makes a noise as shrill and piercing, as if it proceeded from a trumpet.

THE AMERICAN LOCUST.

This species of Cicada is at all times common in Pennsylvania, but at certain periods (generally of fourteen or fifteen years) the numbers are so immense, that it has obtained the general appellation of Locust.

Towards the end of April these insects emerge from the ground, and their appearance is always to be predicted by the swine searching for them. The swarms are sometimes so great, that in the places from which they have arisen, the earth appears nearly as full of holes as a honey-comb. They always leave the ground during the night. On their first coming out they are in the chrysalid state: but soon after-



LOCUSTS.

wards, the back bursts, and the flying insects disengage themselves from their case. For a little while they are entirely white, with red eyes, and seem very weak and tender; but, by the next day, they

attain their full strength and perfection, being of a dark brown color, with four finely variegated transparent wings.

Shortly after they have attained their perfect state, these insects always spread themselves over the country for many miles round. They are excessively voracious, and do infinite damage, in their periodical swarmings, to both orchard and forest trees: and were it not for the number and variety of their enemies, and the naturally short duration of their lives, the inhabitants would often suffer from them all the horrors of famine.

OF THE CIMECES, OR BUGS IN GENERAL.

THE rostrum or beak of the Cimeces or Bugs is inflected; and the antennæ are longer than the thorax. These insects have four wings, folded cross-wise, the upper ones coriaceous on the upper part. The back is flat, and the legs are formed for running.

The *larvæ* differ from the perfect insects in little else than the want of wings. Many of them infest plants, on which they live, and on which they lay their eggs. Several of the species are voracious, and spare scarcely any other insects that they can conquer. They glut themselves with the blood of animals; destroy caterpillars, flies, and even beetles, the hardness of whose elytra would seem to be proof against all their attacks; the incautious naturalist may also himself sometimes experience the severity of their nature.

THE BED-BUG.

The Bed-bug, which is a nauseous and troublesome inhabitant of most of the houses in large towns, is singular in having neither wings nor wing-cases. It runs about with considerable activity in the night, to suck the blood of persons that are asleep, hiding itself by day in crevices and other retired places.

Their most favorite food is blood, dried paste, size, deal, beech, osier, and some other kinds of timber, the sap of which they suck; and on any of these they are able to exist. They will not feed on oak, walnut, cedar, or mahogany; for several pairs, which, for the sake of experiment, were confined with these kinds of wood, soon died, whilst those kept with the others continued to live through the whole year.

The female generally lays about fifty eggs at a time. These are white, and, when protruded, are covered with a viscous matter, which, afterwards hardening, sticks them firmly to the place where they are deposited. These eggs are usually hatched in about three weeks. The general times of laying are March, May, July, and September: so that from every female Bug that out-lives the season, as many as two hundred young-ones may be produced. Thus is the excessive increase of these nauseous animals to be accounted for, where proper care is not taken to destroy them.

The young-ones, for sometime after they first escape from the egg, are perfectly white, but they generally become brown in the course of about three weeks. In eleven weeks they are at full growth. They are then very watchful and cunning creatures; and so fierce, among their own species, that they will sometimes contend with the utmost fury; and in their combats they seldom leave off till either one or both of the animals are killed. Spiders are very fond of them for food.

In order to clear a house of Bugs, the leading point is cleanliness in every respect; for this is their greatest annoyance, and by this alone their increase is to be checked. The first young-ones begin to burst from the eggs early in spring, frequently even in February. At this season it is, that the greatest attention is required. The bed infested by them, ought to be stripped of all its furniture, which should be washed: if linen, it should be boiled; and if stuff, it should be hotpressed. The bedstead should be taken in pieces, dusted, and washed with spirit of wine, or corrosive sublimate, in all the joints and crevices; for it is in these parts, principally, that the females deposit their eggs. This done, all the cavities should be well filled with the best soft soap, mixed up with verdigrease and Scotch snuff. On this composition the young will immediately feed after leaving the egg, (if any escape the cleansing,) and will be destroyed, as will also such of the old ones as happen to be left.

Bugs abound in the countries of nearly all hot climates, whence most of our merchant-vessels are over-run with them. This accounts for their extreme numbers in all the seaport cities and towns, being conveyed thither in clothes, packages, &c. Hence appears the great necessity of examining carefully every thing brought from such vessels into the houses.

Deal and beech boards should be removed, as should also every thing that is fixed to a bed by means of paste, as these afford them both shelter and food. Oak and mahogany are probably the best kinds of wood to use, as the closeness of their texture allows the animals but an uncomfortable situation.

It is supposed that Bugs do not altogether lie torpid during the winter, but that in the cold weather they require less nutriment; and therefore that they are not tempted to come so often out of their retreats, as they do in the warmer seasons of the year.

OF THE APHIDES, OR PLANT-LICE.

THE minute animals which compose this singular tribe, live entirely on vegetables, and the loftiest tree is as liable to their attacks as the most humble plant. Their numbers are often incalculably great. They prefer the young shoots, on account of their tenderness, and frequently insinuate themselves into the very hearts of the plants, doing irreparable mischief even before they are discovered. But, for the most part, they beset the foliage, and are always found on the underside of the leaf. This they prefer, not only on account of its being the most

tender part, but because it affords them protection from the weather, and from various injuries to which they would otherwise be exposed. Sometimes, though rarely, the root is the object of their choice; and the roots of lettuces have been observed so thickly beset with one of the species, that a whole crop has been rendered sickly and of little value. They are rarely to be found on the bark of trees.

The Aphides afford another surprising deviation from the general laws of nature; one impregnation of the female is sufficient for nine generations.

THE APHIS OF THE ROSE-TREE.

This insect, which is well known by the name of *Rose Louse*, is generally of a green color, with the tip of the antennæ and horns black. The tail is pointed, and without a style.

Towards the beginning of February, if the weather be sufficiently warm to make the buds of the rose-tree swell and appear green, this species of Aphis will be found on them in considerable abundance. They are produced from small, black, oval eggs, which were deposited in autumn on the last year's shoots. If, after their appearance, the season become cold, almost the whole of them suffer, and the trees, for that year, are in a great measure freed from them.

Those that withstand the severity of the weather, seldom arrive at their full growth before April, when, after twice casting their skins, they begin to breed. It then appears that they are *all females;* each of them produces a numerous progeny, and that without any intercourse with a male insect.

If the Aphides had not many enemies, their increase in summer would sometimes be destructively great.

After a mild spring, most of the species of Aphis become so numerous as to do considerable injury to the plants on which they are found. The best mode of remedying this evil, is to lop off the infected shoots before the insects are greatly multiplied, repeating the same operation before the time that the eggs are deposited. By the first pruning, a very numerous present increase will be prevented; and by the second, the following year's supply may, in a great measure, be cut off.

OF THE COCCUS, OR COCHINEAL INSECTS.

These are an extremely fertile race, and many of them are very troublesome in stores and green-houses. The females fix themselves, and adhere almost immovably, to the roots, and sometimes to the branches, of plants. Some of them, having thus fixed themselves, lose entirely the form and appearance of insects: their bodies swell, their skin stretches and becomes smooth, and they so much resemble some of the galls or excrescences, found on plants, as by inexperienced persons to be mistaken for such. After this change, the abdomen

serves only as a kind of shell or covering, under which the eggs are concealed. Others, though they are likewise thus fixed, preserve the form of insects, till they have laid their eggs and perish. A kind of down or cotton grows on their belly, which serves for the formation of the nest, in which they deposit their eggs.

The males are very different in their appearance from the females. They are furnished with wings, and are small but active insects.

Most of the species of Coccus, which infect our green-houses and conservatories, have been brought over, with exotic plants, from other climates.

THE LAC COCHINEAL.

Around the edges of their body they are environed with a sub-pellucid gelatinous liquid, which seems to glue them to the branch. The gradual accumulation of this liquid at length forms a complete cell for the insect. The insect is now, in appearance, an oval, smooth, red bag, without life, about the size of a small American Cochineal insect, emarginated at the obtuse end, and full of a beautifully red liquid.

These insects, which in the East Indies have the name of Gum Lac, are principally found on the trees of the uncultivated mountains on both sides of the Ganges, where nature has been so bountiful, that, were the consumption many times greater than it now is, the markets would be fully suppled. The only trouble is in breaking down the branches and carrying them to market.

Stick Lac is the natural state of this production. When the cells are separated from the sticks, broken into small pieces, and appear in a granulated form, they are called Seed Lac. This, liquified by fire and formed into cakes, is Lump Lac. When the cells are liquified, strained, and formed into thin, transparent laminæ, the substance has the name of Shell Lac.

Of Shell Lac the natives of Eastern countries make ornamental rings, to decorate the arms of females. They also form it into beads, necklaces, and other female ornaments. This substance was formerly used in medicine, but it is now confined principally to the making of sealing-wax, and to japanning, painting, and dyeing

THE AMERICAN COCHINEAL.

This Cochineal, so useful to painters and dyers, is a native of South America, where it is found on several species of Cactus, particularly the *Cactus Opuntia* or Prickly Pear-tree. In Jamaica these insects are also now tolerably common, but they are generally understood to have been introduced from America. The heavy rains, however, to which the West India islands are subject, often render the industry of the natives in breeding and rearing them entirely fruitless.

LEPIDOPTEROUS INSECTS.

THE present order contains only three tribes; the Butterflies, Sphinges and Moths. These are all produced from caterpillars, by a change that is common to all the insect species. The caterpillars proceed from eggs; and the eggs of Butterflies are sometimes so numerous, that, in the spring of the year, the leaves and tenderest stems of plants are nearly covered with them.

Caterpillars are, in general, extremely voracious. Some of them eat more than double their own weight in a day, and this without suffering any inconvenience; for the digestive powers of all animals are proportioned not so much to their size, as to the duration of their lives.

They often change their skin without much altering their shape, till at last they assume a shape very different from that which they before possessed. They have now the name of *Aurelia* or *Chrysalis;* and in this state all the parts of their future form are visible, but under a thick shell: and these are so very soft and delicate, that the least touch discomposes them.

The production and manners of these animals, afford subject both of amusement and instruction.

About the middle of summer a butterfly deposits from three to four hundred eggs on the leaf of a tree; from each of these, in a few days, a young caterpillar proceeds. The eggs of one of the species are no sooner hatched, than the young-ones begin to form a common habitation. They spin silken threads, which they attach to one edge of the leaf and extend to the other. By this operation they make the two edges of the leaf approach each other, and form a cavity resembling a hammock. In a short time the concave leaf is completely roofed with a covering of silk. Under this tent the animals live together.

About the beginning of October, or when the frost commences, the whole community shut themselves up in the nest. During the winter they remain immovable, and seemingly dead; but, when exposed to heat, they soon discover symptoms of life, and begin to creep. They seldom go out of the nest till the middle or end of April. When they shut themselves up for the winter, they are very small; but, after they have fed for some days in spring, upon the young and tender leaves, they find the nest itself, and all the entrances to it, too small for the increased size of their bodies. To remedy this inconvenience, these creatures know how to enlarge both the nest and its passages, by additional operations accommodated to their present state. Into these new lodgings they retire, in order to screen themselves from the injuries of the weather, or to cast their skins. In fine, after having cast their skins several times, the period of their dispersion arrives.

From the beginning to nearly the end of June, they lead a solitary life. Their social disposition is no longer felt. Each of them spins a pod of coarse brownish silk. In a few days they are changed into chrysalids, and in eighteen or twenty days more they are transformed into butterflies.

OF THE BUTTERFLIES IN GENERAL.

THE antennæ of these insects are thicker towards the tip than in any other part, and generally end in a knob. The wings, when at rest, are erect, the upper edges meeting together over the body. They are all diurnal animals.



THE CHRYSALIDS OF BUTTERFLIES.

These elegant insects feed on the nectar of flowers, and on the moisture which exudes from plants and trees, which they extract by means of their long proboscis or tongue. Their *caterpillars* are sometimes smooth, and sometimes thickly covered with hair; and their *chrysalids* are naked, and attached, apparently in a lifeless state, to trees, or other substances, by filaments proceeding either from the tip or the midle of their bodies.

THE LARGE WHITE BUTTERFLY.

This is a common species, and, in its caterpillar state, is often very destructive to our cabbage and cauliflower plants. The caterpillars seem almost confined to these vegetables, on which they are generally to be found in great numbers from June to October. The Butterflies first appear on wing in the middle of May, and, about the end of the same month, they lay their eggs in clusters on the under sides of cabbage-leaves. In a few days the caterpillars come forth, and continue to feed together till the end of June, when they are at their full growth. They then traverse about in search of some convenient place to fix themselves, where, after their change, the chrysalids may be sheltered. When such are found, they each fasten their tail by a web, and carry a strong thread of the same round



THE LARGE WHITE BUTTERFLY.

their body near the head; and thus firmly secured, they hang a few hours, when the chrysalis becomes perfectly formed, and divested of the caterpillar's skin. In fourteen days after this, the Butterfly is produced. The caterpillars of this latter brood attain their growth, and change to chrysalids in September, in which state they remain through the winter, till the beginning of the following May. During this time we often see them hanging under the copings of garden walls, under pales, and in other places, where they can have tolerable shelter from the inclemency of the weather.

The most effectual way of clearing cabbage and cauliflower plants of caterpillers, is to send children into the gardens, to pick them off and destroy them. This may seem a troublesome and expensive mode; but it has been found to answer, even to the extent of clearing many acres of field cabbages.

THE PURPLE EMPEROR.

The wings are indented and of a rich brown color, with a blue gloss, and have a whitish interrupted band on each side. On the upper part of the under wing there is an eye-like spot.

This is the most beautiful and most interesting of all the British butterflies. In its manners, as well as in the varying lustre of its purple plumes, it possesses the strongest claim to our attention.

It makes its appearance about the month of July, fixes its residence upon the summit of some lofty oak, from the utmost sprigs of which, in sunny days, it performs its aërial excursions. "In these," continues this writer, "he ascends to a much greater elevation than any insect I have ever seen; sometimes mounting even higher than the eye can follow, especially if he happen to quarrel with *another Emperor*, the monarch of some neighboring oak. These insects never meet without a battle, flying upward all the while, and combating furiously with each other: after which they frequently return to the identical sprigs from which they each ascended.

The caterpillar is green, with oblique white lines. It is rough on the upper part of the body; and on the head there are two spines. It feeds on the oak. The chrysalis is green, has two horns, and is somewhat compressed.

THE PEACOCK BUTTERFLY.

The caterpillars of this butterfly are produced from eggs, which have been deposited in the spring of the year on the nettle. They live in society, and are to be found, throughout the early part of the summer, feeding on this plant. They are black, and their bodies are covered with spines, and marked with numerous small white specks.



THE PEACOCK BUTTERFLY.

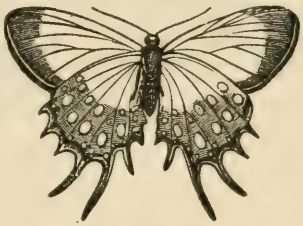
Shortly after the little animals first see the

night, they begin to spin for themselves a large and commodious web, into which they flee for shelter during rainy weather, and in the night; and under the protection of which they change their skins.

When they have attained their full growth, they seek out some proper place where they can safely take their chrysalid form. In doing this they suspend themselves vertically, with the head downward; and the chrysalis, thus suspended, continues for about twenty days, about the end of which time the insect becomes perfected, breaks out from its shell and flies away.

THE MARSH FRITILLARY.

The Marsh Fritillary is a small butterfly, not measuring more than an inch and a half across the broadest part of its expanded wings. Its color is a brownish orange, variegated with yellow and black, in a small pattern. The under sides of the wings are lighter, and chiefly orange and yellow.



THE MARSH FRITILLARY.

The caterpillars of this insect are to be seen, in some particular situations, in September, in great abundance. As they increase in size, they go abroad in search of food; but their local attachment is very remarkable, for neither the caterpillar, nor even the butterfly will stray far from the place where it was bred. Numbers of the latter may sometimes be observed on wing, in a small spot of swampy or marsh land, when not one of them is to be met with in any of the adjacent places. As they fly very low, and frequently settle, the naturalist has no difficulty in catching them. The caterpillars are generally at their full growth about the last week in April. They now suspend themselves by the tail to change into chrysalids, and in this state they remain about fourteen days. Their mode of suspension is a singular instance of the extraordinary power of instinct. They first draw two or three small blades of grass across towards their top, and fasten them together by means of their silk, then hang themselves beneath the centre of these, each having his own little canopy. By this means they are not only hidden from the sight of birds, but in a great measure defended from the injury, which they might otherwise sustain from windy and boisterous weather.

OF THE SPHINGES, OR HAWKMOTHS.

The bodies of these insects are usually thick and heavy, and their wings long and admirably calculated for rapid flight. Some of them are among the largest of the Lepidopterous Insects. They fly for the most part, early in the morning, and late in the evening. They hover

over flowers, and, without settling upon them, suck out the nectarious juices by means of their long and spiral tongue.

Their caterpillars are large, smooth, and without hairs, and furnished with a single erect horn near their posterior extremity. The greater number of the species change into chrysalids under the surface of the ground.

THE DEATH'S HEAD HAWKMOTH.

The name of this moth has been obtained from its having upon the thorax somewhat the appearance of a human skull. It is the largest of all the British species, the wings of the females measuring sometimes more than five inches in extent.



THE DEATH'S HEAD HAWKMOTH.

When taken into the hand, this moth makes a singular kind of noise, by striking its palpi against the tongue. This, by some persons has been compared to the plaintive squeaking of a mouse.

Several persons have attempted to feed the caterpillars, for the purpose of obtaining specimens of the insect in its perfect state. But although they have diligently attended to them, and the insects have completed their transformation into chrysalids, I have not yet heard of any one, who was able to rear them up to the winged state. I have myself made numerous attempts, but have invariably failed.



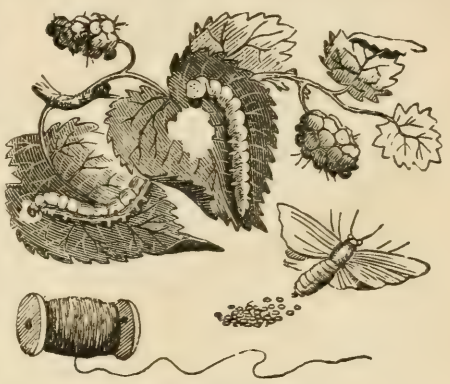
THE DEATH'S HEAD MOTH.

OF THE MOTHS IN GENERAL

THE Moths are only to be seen flying abroad in the evening and during the night, which are their times of feeding. The larvæ or *caterpillars* are in general smooth, and more or less cylindrical: they are active creatures, and prey with great voracity on the leaves of plants. Their *chrysalids* are either concealed in the ground, or protected from the inclemency of the weather by a silky covering, spun by the larvæ around their bodies. In this state they are either simple, or have a kind of hook at their extremity.

THE SILKWORM.

The Silkworm is found, in a native state, on mulberry-trees, in China and some other eastern countries, whence in the reign of the emperor Justinian, it was originally introduced into Europe. It is, however, at this time become, in a commercial view, one of the most valuable of all insects; affording those delicate and beautiful threads, that are afterwards woven into silk and manufactured into garments in almost all parts of the world.



THE SILKWORM, EGGS AND SILK.

In the warmer climates of the east, the Silkworms are left at liberty upon the trees; where they are hatched, and on which they form their cocoons: but in cooler countries, where these animals have been introduced, they are kept in a room with a south aspect, built for the purpose, and are fed every day with fresh leaves.

The eggs are of a straw-color, and each about the size of a pin's head. At its birth the larva or worm is entirely black, and about as long as a small ant; and it retains this color eight or nine days. The worms are put on wicker shelves, covered first with paper, and on this with a bed of the most tender of the mulberry-leaves. Several ranges are placed in the same chamber, one above another, about a foot and a half apart. The scaffolding for these ranges should, however, be in the middle of the room, and the shelves not too deep. The worm continues feeding during eight days after its birth, when it becomes about the fourth of an inch in length: it then experiences a kind of lethargic sleep for three days, during which it casts its skin. It now feeds for about five days, and is considerably increased in size, when a second sickness comes on. In the next ten days it experiences two other attacks; by which time it has attained its full growth, and is somewhat more than an inch in length, and two lines in thickness. It then feeds during five days, with a most voracious appetite; after which it refuses food, becomes transparent, with a tinge of yellow, and leaves its silky traces on the leaves that it passes over. These signs denote that it is ready to begin the cocoon, in which it is to undergo its change into a chrysalis. The animals are then furnished with little bushes of heath or broom, stuck upright between the shelves; they climb up the twigs, where, after a little while, they begin the foundation of their lodge, and are five days in spinning the cocoon. They generally remain in this state about forty-seven days.

The exterior of the cocoon is composed of a kind of rough cotton like substance, called floss, within this the thread is more distinct and even; and next to the body of the aurelia, the apartment seems lined with a substance of the hardness of paper, but of a much stronger consistence. The thread which composes the cocoon, is not rolled regularly round, but lies upon it in a very irregular manner, and winds off first from one side, and then from the other.



COCOONS.

In the course of six or seven days, all the cocoons are generally formed: they are then taken from places where they had been deposited, and divided into classes. The best are strong, and of a pure, unspotted color. Some are white, and others yellow. The good ones are firm and sound, of a fine grain, and have both ends round and strong. Those of a bright yellow yield more silk than the others.



a. & b. BUTTERFLIES. c. THE EGGS. d. THE PUPA. e. SILKWORM.

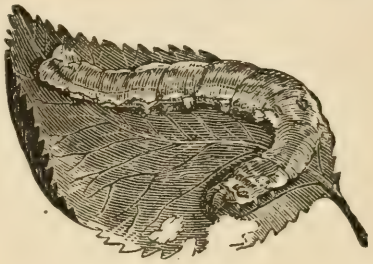
But the pale ones are preferred, because they take certain colors better, and because, since they contain less gum than the others, they lose less than those in boiling.

Five or six days after the cocoon has been detached, the birth of the moth is prevented, as the insect would otherwise pierce the shell, and thereby render the cocoon useless. To prevent this, the cocoons are put into long, shallow baskets, covered up, and baked for about an hour, in a heat equal to that of an oven from which the bread is just drawn

After the baking, they are disposed in a proper manner on osier shelves, distributed into stories, two or three feet distant from each other.

The whole thread, if measured, will be found about three hundred

yards long; and it is so fine, that eight or ten threads are generally rolled off into one. For this purpose the cocoons are put into small coppers or basins of water, each over a small fire. The ends of the threads are found by brushing them over gently with a whisk made for the purpose; and in the winding they are each passed through a hole, in an horizontal bar of iron placed at the edge of the basin, which prevents them from becoming entangled.



SILKWORM ON A MULBERRY LEAF.

A fortnight or three weeks generally elapse before the insect within the cocoon is changed into a moth; but no sooner is it completely formed, than, having divested itself of its aurelia skin, it prepares to burst through its prison. For this purpose it extends its head towards the point of the cocoon, and gnaws a passage through its cell, small at first, but enlarging as the animal increases its efforts for emancipation. The tattered remnants of its aurelia skin are left in confusion within the cocoon, like a little bundle of dirty linen.

The animal thus set free, appears exhausted with fatigue, and seems produced for no other purpose than to transmit a future brood. The male dies immediately after its conjunction with the female; and she only survives him, till she has laid her eggs, which are to be hatched into worms in the ensuing spring.

In many parts of Italy, the inhabitants contrive to have two silk-harvests in the year. They keep the eggs in very cool places; and, when the mulberry-trees (after having been stripped entirely of their leaves for former worms) begin to bud a second time, they expose the eggs to be hatched.

During the whole time in which the animals continue in a worm state, the utmost care and attention are requisite, as they are extremely susceptible of cold, dampness, and unpleasant smells.

THE CLOTHES MOTH.

The larva of this little Moth is well known from the damage it commits in woolen cloth and furs. These substances constitute the principal support of the caterpillar, and therefore the parent is, by its natural instinct, directed to deposit its eggs in them. The caterpillar, as soon as it quits the egg, begins to form for itself a nest: for this purpose, after having spun a fine coating of silk immediately around its body, it cuts the filaments, of the wool or fur, close to the thread of the cloth, or to the skin. This operation is performed by its jaws, which act in the manner of scissors. The pieces are cut into convenient lengths, and applied, with great dexterity, one by one, to the outside of its case; and to this it fastens them by means of its silk. Its covering being thus formed, the little caterpillar never quits it but

in the most urgent necessity. When it wants to feed, it puts out its head at either end of its case, as bests suits its convenience. When it wishes to change its place, it puts out its head, and its six fore-legs, by means of which it moves forward, taking care first to fix its hind legs into the inside of the case, so as to drag it along.

It lives in this manner, until by the augmentation of its size, its case becomes too small for the body. When this is felt, it begins by making a small addition to one end; then, turning itself within the case, which, in the middle, is always wide enough for that purpose, it makes a little addition to the other end, so as still to preserve the widest part exactly in the middle; and in a similar manner it makes every successive addition.

The progress of its operations may be easily remarked, by transferring it from cloth of one color to that of another. In this case every fresh addition will become conspicuous, by forming a small ring of their respective colors at each end, as they are used.

When the case wants widening, the insect, with its scissor-like teeth, begins by making a slit lengthways, from the centre to one of the extremities. This opening it instantly fills up with a thin stripe of wool externally, and silk internally, in the same manner as in the other parts. It afterwards, at a little distance from this, makes another slit at the same end, which it also fills up; then turning itself within, it repeats the same process from the centre to the other end.

After having changed within its case into a chrysalis, it issues, in about three weeks, a small winged nocturnal Moth, of silvery-gray color, well known to almost every mistress of a family.

It may be useful to point out the best modes of preventing the havoc, which these insects commit in our wardrobes and furniture. The smell of oil of turpentine is instantaneous death to them; if, therefore, the goods affected by them be put into a close place, along with a saucer or other open vessel containing oil of turpentine, the warm air raising the vapor will immediately destroy them. Sometimes, if the caterpillars be old and strong, it may be necessary to brush the clothes with a brush, the points of which have been dipped in the turpentine. The smoke of tobacco also kills them; and cloth that has been steeped in a decoction of tobacco-leaves, will never afterwards be affected by them.

THE MAY FLY.

The May Fly is the largest of the British species. In the month of June it assembles in myriads under trees near waters, and dances away the few hours allotted to it, ascending and descending in the air, forming mazy circles, and giving life and animation to the loveliness of a balmy summer evening. Their larvæ are the favorite food of the fresh-water fishes, as are also the flies themselves. They are more numerous in running streams than in standing waters.

NEUROPTEROUS INSECTS.

THE insects of the Linnean order *Neuroptera* have four membranaceous, transparent, naked wings, in which the membranes cross each other so as to appear like net-work. The tail has no sting, but, in the males of many individuals, is furnished with appendices like pincers.

OF THE LIBELLULÆ, OR DRAGON-FLIES.

The mouth of the Dragon-fly is armed with jaws, generally more than two in number. The antennæ are very thin, of equal thickness throughout, and shorter than the thorax. The wings are expanded, and the tail of the male insect is furnished with a forked process.

Few of the insect tribes are more beautiful than these. Their colors are various and brilliant: we observe in them green, blue, crimson, scarlet, and white; and even in some individuals, most, if not all, of these colors are blended. In addition to the beauty of their colors, the brilliancy of their eyes, and the delicate texture and wide expansion of their wings, are highly deserving of notice and admiration.

The parent insects deposit their eggs on the surface of the water. Thence they sink to the bottom, where, in due time, they are hatched. The larvæ, which proceed from these eggs, are active inhabitants of the water; and, furnished with forcipated jaws, they prey with the most rapacious ferocity on aquatic insects. The *chrysalis* resembles the larvæ in every respect, except in having the rudiments of wings.

In both these primary states the insects respire water, by receiving and ejecting it at an aperture at the termination of their bodies. They are occasionally observed to throw water with such force, that the stream is perceptible to the distance of two or three inches from their bodies. But though the insect thus respires the water, air seems to be not the less necessary to its existence: for, like other insects, the whole interior part of its body is amply furnished with large and convuluted breathing-pipes; and, externally, there are several small openings destined for the introduction of air.

OF THE EPHEMERÆ, OR DAY-FLIES.

THE mouth of the Ephemera has no jaws, but is furnished with four very short thread-shaped feelers. The antennæ are short and thread

shaped; and above the eyes there are two or three large stemmata. The wings are erect, (the lower ones much the shortest,) and the tail is terminated by long hairs or bristles.

The Ephemeræ differ in many respects from all other insects. Their *larvæ* live in water for three years, the time they consume in preparing for their change, which is performed in a few moments. The larva, when ready to quit that state, rises to the surface of the water, and, instantaneously freeing itself from its skin, becomes a chrysalis. This *chrysalis* is furnished with wings: it flies to the nearest tree or wall, and, there settling, it at the same moment quits a second skin, and becomes a perfect Ephemera. In this state all the species live but a very short time, some of them scarcely half an hour; having no other business to perform than that of continuing the race. They are called the insects of a day; but few of them ever see the light of the sun; being produced after sunset, during the short nights of summer, and dying long before the dawn. All their enjoyments, therefore, seem confined entirely to their larva state.

The Ephemera are very frequent near waters, and in some places they multiply enormously. About Laz, in Carniola, a province in Germany, we are informed by Scopoli, that they are so numerous in the month of June, that they are used as manure; and if each farmer cannot obtain more than *twenty cart-loads*, the harvest is considered a bad one.

The larvæ scoop out dwellings in the banks of rivers. These consist of small tubes, made like syphons, with two holes, the one serving for an entrance, and the other as an outlet; and these are so numerous, that the banks of some rivers are observed to be full of them. When the waters decrease, they dig fresh holes lower down. The flies are produced nearly all at the same instant, and in such numbers, as even to darken the air.

The females, aided by the threads of their tails, and the flapping of their wings, support themselves on the surface of the water, and, in an almost upright position, drop their eggs in little clusters into the water. A single insect will sometimes lay seven or eight hundred eggs.

OF THE PHRYGANEÆ, OR CADEW FLIES.

THE mouth is furnished with a horny, short, curved mandible, and four feelers. The antennæ are setaceous, and longer than the thorax. The wings are equal, and incumbent; and the lower ones are folded.

The Phryganeæ are to be observed, during the spring and summer months, flying about, or resting upon the grass and weeds near the borders of rivers, streams, and ponds. They deposit their eggs on aquatic plants. These are enclosed in a glairy matter, as transparent as water, and of the consistence of jelly, by means of which they firmly adhere to the place where they have been deposited.

THE larvæ, when hatched, form for themselves tubes of silk, the interior of which is smooth and polished, and to the exterior of which

they attach fragments of different substances; thus constituting a strong defence against the attempts of their enemies. Some of the species employ, for this purpose, bits of leaves, straw, grass, or rushes; others adopt the shells of small aquatic snails; others, grains of sand; and others employ several different kinds mixed together. They contrive to make their habitations nearly in equilibrium with the water, by adding a bit of wood when too heavy, and some heavier substance when too light.

OF THE MYRMELEON, OR ANT-EATER TRIBE.

THE antennæ of these insects are about the length of the thorax, and thickest at the tip. The mouth is armed with jaws, teeth, and six feelers. The wings are deflected; and the abdomen of the male terminates in a forceps composed of two straight filaments.

The Myrmeleons constitute a tribe of insects, which, from their extremely singular habits, whilst in a larva state, are highly interesting.

The *larvæ* are hairy, with six feet; and have strong, exserted, and toothed jaws. They prey with savage ferocity on ants, and some of the smaller insects; and, for the purpose of ensnaring their prey, they form a kind of funnel or pit in light earth, at the bottom of which they lie buried.

The *chrysalis* is enclosed in a little ball of sand or earth, the particles of which are agglutinated together by a viscid matter, which the larva mixes with it previously to its change.

THE AMAZON-ANT.

The Amazon-ant, however, deviates from others in this respect:—their neuters procure auxiliaries by open violence, of their own caste but of different species. When the heat of the day begins to lessen, and exactly at the same hour for several days, they quit their nest, and advance in a solid column, more or less numerous according to their population, upon the ant-hill they mean to attack. Into it they soon penetrate, notwithstanding the opposition of the inhabitants, seize the larvæ and nymphs of the neuters peculiar to the invaded community, and transport them in the same warlike order to their own garrison, where they are attended to by other neuters of their own species, who have been either metamorphosed there, or brought as captives from their original dwelling. These constitute what are called mixed ant-hills.

Our northern species differ from those of the torrid zone, in remaining torpid during winter, so that they require no sustenance, and accordingly lay up no store; but the others, which continue active, make provision for the evil day. Their food consists of fruit, insects or their larvæ, dead bodies of small quadrupeds or birds, and sweets of every description within their reach.

HYMENOPTEROUS INSECTS.

OF THE CYNIPS, OR GALL-INSECT TRIBE.

The insects of the Linnean order *Hymenoptera* have generally four membranaceous, naked wings. In some of the tribes the neuters, and in others, the males or females, are destitute of wings. The tail, in the females and neuters, is armed with a sting.

The mouth is furnished with a short, single-toothed, membranaceous jaw. The mandibles are horny and cleft, and the lip is entire. The feelers are four in number. The sting is spiral, and often concealed within the body.

Most of the Gall-insects are produced from eggs deposited by the parents in the tender branches, or upon the leaves of trees in the spring of the year; others live concealed among the leaves, and others are bred in the bodies of other insects.

Those which deposit their eggs in the branches or leaves of trees, place them in a small hollow, which they form by means of an instrument at the posterior part of their body. Each egg is fixed to the spot by a kind of gluey matter, with which it is covered.

The juices of the leaf or stem overflow by the small vessels, which are opened in this operation, and thus form a gall or excrescence, in which the egg becomes enclosed. When the larva is hatched, it finds around it the food, that is necessary for its subsistence. It gnaws and lives upon the substance of the gall, which increases in bulk and consistence, in proportion as its interior is thus destroyed.

Some of these galls have, in their interior, either only one cavity, in which many larvæ are enclosed together, or many small cavities, having a communication with each other; some have many separate cavities; and others have only one cavity, which is occupied by a solitary insect.

When the larvæ have attained their full growth, some of the species eat their way out, and drop upon the earth, in which they bury themselves, and there undergo their metamorphosis; and others are transformed within the galls, and leave them only as perfect insects.

OF THE TENTHREDO, OR SAW-FLY TRIBE.

The mouth has a horny curved mandible, toothed within. The jaw is straight and obtuse at the tip, and the lip is cylindrical and bifid. The feelers are four in number, and filiform. The wings are tumid,

the lower ones shorter than the others. The sting is composed of two serrated laminæ, and is almost concealed in the body.

This insect is small, of a yellowish tinge, and, in its general appearance, is not much unlike a common house-fly.

By means of the saw with which these insects are supplied, some of the species deposit their eggs in the buds of flowers, and others in the twigs of trees or shrubs. This implement, which is situated in the posterior part of their body, is formidable only in appearance, and seems destined solely to the purpose of depositing their eggs.

The larvæ have from eighteen to twenty-eight legs. They subsist on the leaves of plants; and, when full grown, some of them bury themselves in the ground, and others form a nidus between the leaves of the plant on which they feed, and within it change to a *pupa*. Those which undergo their change under the earth, usually remain there during the winter, the perfect insect issuing forth in the ensuing spring.

OF THE ICHNEUMONS.

THE antennæ of the Ichneumon-flies taper towards their extremity and consist of more than thirty joints or articulations. The mouth is armed with jaws, and has four unequal thread-shaped feelers. At the extremity of the abdomen there is a long sting, having, however, no pungent property, enclosed in a cylindrical sheath composed of two valves.



THE ICHNEUMON FLY.



THE GADFLY.

The larvæ of all the Ichneumons derive nutriment from other insects. The female, when about to lay her eggs, perforates with her sting either the body or the nidus of some other insect or caterpillar, and deposits them there. The sting of one of the species, though extremely fine, is so strong as to penetrate through mortar and plaster. The food of the family to be produced from the eggs of this fly, is the larvæ of wasps or mason-bees; for the parent Ichneumon no sooner discovers one of the nests of these insects, than it fixes on it and in a moment bores through the mortar, of which it is built.

Some species agglutinate their eggs upon caterpillars; others penetrate the bodies of caterpillars, and deposit their eggs in the inside. When the *larvæ* are hatched, their heads are so situated that they pierce the caterpillars, and penetrate to their very entrails. These larvæ suck the nutritious juices of the creatures without attacking their vitals; for they seem to be all the time perfectly healthy, and

even sometimes are enabled to transform themselves into chrysalids. "A friend of mine," says Dr. Derham, "put about forty large caterpillars, collected from cabbages, on some bran and a few leaves, into a box and covered it with gauze to prevent their escape. After a few days we saw from more than three-fourths of them, about eight or ten little caterpillars of the Ichneumon fly come out of their backs, and spin each a small cocoon of silk, and in a few days the large caterpillars died." The Ichneumons performed singular service, in the years 1731 and 1732, by multiplying in the same proportion as the caterpillars. Their larvæ consequently destroyed infinitely more of these voracious creatures than could possibly have been done by all the efforts of human industry. Aphides, or Plant-lice, and the larvæ of various other insects, are also made the nidus of the Ichneumon.

OF THE SPHEGES.

THE antennæ in this tribe consist of ten joints or articulations; and the mouth is armed with jaws. The wings in both sexes are extended, and do not fold together. The sting is pungent, and concealed within the abdomen.

Many species of Sphex are common in England. They are chiefly found in woods and hedges; and their larvæ feed on dead insects, in the bodies of which the parent Spheges lay their eggs.

Some of the species, like Dogs, dig holes in the earth with their fore-feet, and in each of these, after having deposited their eggs in its body, they bury an insect, and then carefully close it up with earth.

There are no insects, which display greater affection for their offspring than these; nor are any more rapacious. They are excessively fierce, and, without hesitation, attack insects much larger than themselves. Their strength is very great; their jaws are hard and sharp, and their stings are armed with poison, which suddenly proves fatal to most of the creatures with which they engage. The Sphex seizes, with the greatest boldness, on the creature it attacks, giving a stroke with amazing force, then falling off, to rest from the fatigue of the exertion, and to enjoy the victory. It keeps, however, a steady eye on the object it has struck, until it dies, and then drags it to its nest for the use of its young. The number of insects, which this creature destroys, is almost beyond conception, fifty scarcely serving it for a meal. The mangled remains of its prey, scattered round the mouth of its retreat, sufficiently betray the sanguinary inhabitant. The eyes, the filament that serves as a brain, and a small part of the contents of the body, are all that the Sphex devours.

OF THE SAND-WASP TRIBE.

THE beak is conical, inflected, and contains a retractile, tubular tongue, that is cleft at the end. The jaws form a kind of forceps, and are three-toothed at the tip; and the antennæ in each sex are thread

shaped, with about fourteen joints or articulations. The eyes are oval, and the wings plain. The sting is pungent, and concealed in the abdomen.

The Sand-wasps were separated, by the Rev. Mr. Kirby, from the last tribe, though, in their manners and economy, the insects of each have a near resemblance. In their external appearance, however, there are characteristics sufficient to admit, with great propriety, of two genera.

OF THE WASP TRIBE.

THE mouth is horny, and furnished with a compressive jaw, and four unequal, thread-shaped feelers. The antennæ are filiform, the first joint longer than the rest, and cylindrical. The sting is pungent, and concealed within the abdomen.



THE WASP AND HORNET.

The Wasps, like Bees, are in general found in large societies; and they construct curious combs or nests, in which they deposit their eggs. Some, however, are solitary, and form for each young-one a separate nest. Their *larvæ* are soft, without feet, and are fed with the nectar of flowers or honey, but of a kind very inferior to that collected by the Bees. The *chrysalis* is without motion, and has the rudiments of wings.

A distinguishing character of this tribe is their having smooth bodies, apparently without hairs, and their upper wings, when at rest, folded through their whole length. At the base of each of these there is a scaly process, that performs the office of a spring, in preventing the wings from rising too high; a caution of some importance to these carnivorous insects, which pursue their prey at full stretch of wing.

THE HORNET.

It is chiefly in the hollow trunks of decayed trees that the Hornets form their nest. They live collected together in communities, which consist of males, females, and neuters or laborers. Their nest is of a dirty yellowish color, and usually constructed under the shelter of some outhouse, in the hole of an old wall, or more frequently in the hollow trunk of some decayed tree. The hole of entrance to this nest is often not more than an inch in diameter.

In the spring of the year, those of the females which have survived the winter, are reanimated by the warmth of the season, issue from their hiding-places, and search out a convenient place in which they can establish their nest. When this is found, they commence their

first operation by forming a column, of the same materials as those which are afterwards employed in the other parts of the fabric, but much more compact and solid. This column the female fixes in the most elevated part of the vault, which is intended to contain the nest. A kind of cover is next formed, and then a small comb of hexagonal cells, with their openings downward, for the purpose of containing her eggs and the grubs which issue from them.

The eggs are soon hatched, and the mother nourishes her offspring with food which she brings to them from abroad. When the grubs have attained their full size, they each spin a silken bed, in which they undergo their metamorphoses into *pupæ*, and afterwards into perfect or winged insects.

The insects first produced are the neuters. These are the working insects, or laborers. From their first entrance into life they are occupied in the work of constructing cells, and in the duty of nourishing the remaining grubs.

As the females still continue to lay their eggs, the family is consequently augmented; and the nest becoming at length too small, necessity requires it to be enlarged. This operation also falls upon the laborers.

In the month of September and the beginning of October, the brood of males and females quit their *pupæ* state. All that are left, whether males, females, or neuters, are generally put to death before the end of October, particularly if the frosts have at all begun to be felt. The Hornets, in place of continuing to nourish the remaining grubs, are now occupied only in tearing in pieces the cells, and throwing them out of the nest. After this period both the males and the neuters daily perish in great numbers; so that, by the end of winter, the females, which are enabled to pass that season in a torpid state, are the only ones that remain alive.

Thus terminates this society, of which the greatest population does not often exceed the number of a hundred or a hundred and fifty individuals.

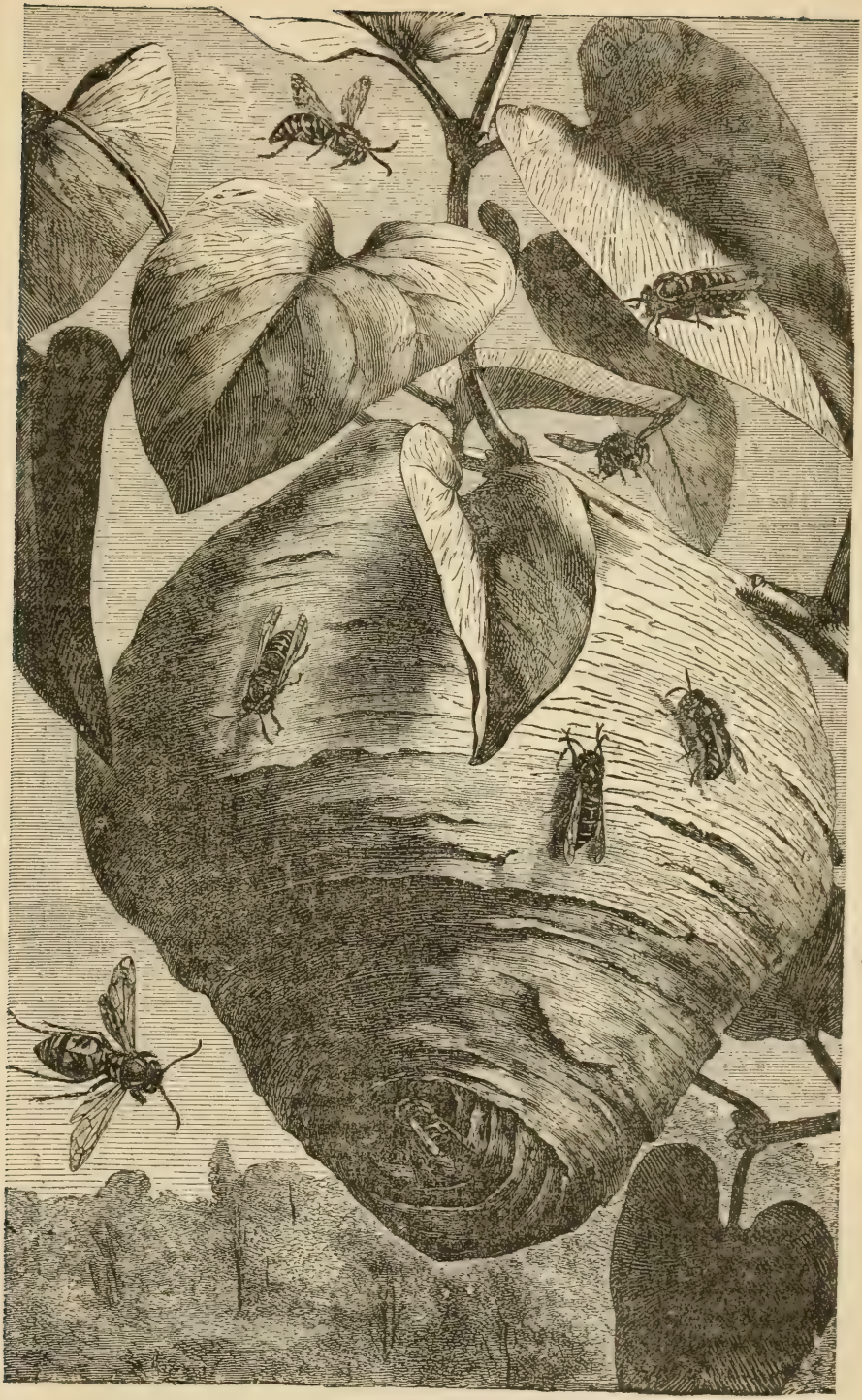
The combs are composed of a substance which somewhat resembles coarse paper or old parchment.

These insects are extremely voracious. They seize upon and devour, with great eagerness, other insects, and frequently even bees. Their size gives them a superiority over almost all the flies which they attack; but as they are somewhat slow and heavy in their flight, these are frequently able, by their greater agility, to escape.

THE COMMON WASP

The nest of the common Wasp is always formed under the surface of the earth, and these insects not unfrequently occupy with it the forsaken dwelling of a mole. The entrance to the nest is a passage usually about an inch in diameter, from half a foot to two feet deep, and generally in a zigzag direction.

When exposed to the view, the whole nest appears to be of a round-



ish form, and is twelve or fourteen inches in diameter. It is strongly fortified all round with walls, in layers, formed of a substance somewhat like paper, the surface of which is rough and irregular. In these walls, or rather in this external covering, two holes are left for passages to the combs, one of which is uniformly adopted for entrance, and the other as a passage out. The interior of the nest consists of several stories, or floors of combs, which are parallel to each other, and nearly in an horizontal position. Every story is composed of a numerous assemblage of hexagonal cells. These contain neither wax nor honey, but are solely destined for containing the eggs, the worms which are hatched from them, the chrysalids, and the young Wasps until they are able to fly. The combs are from eleven to twelve in number. Reaumur computed the number of cells in the combs of a middle-sized nest to be at least ten thousand; and as every cell serves for three generations, a nest of this description would annually give birth to *thirty thousand* Wasps.

The different stories of combs are always about half an inch distant. By this arrangement, free passages are left to the Wasps from one part of the nest to another. Each of the larger combs is supported by about fifty pillars, which at the same time that they give solidity to the fabric, greatly ornament the whole nest. The lesser combs are supported by a similar contrivance. The Wasps always begin at the top and work downward.

In the republic of Wasps, like that of Bees, there are three different kinds of flies; males, females, and neuters. The greatest share of labor devolves upon the neuters: but they are not, like the neuter bees, the only workers; for there is no part of the different operations which the females, at certain times, do not execute. Nor do the males remain entirely idle. The neuters, however, build the nest, feed the males, the females, and even the young-ones. But, while these are occupied in different employments at home, the others are abroad in hunting-parties. Some of them attack with intrepidity live insects, which they sometimes carry entire to the nest; but if these be at all large they transport only the abdomen. Others make war on the bees, killing them for the honey they have in their bodies, or plundering their hives for the fruits of their labor. Some resort to the gardens, and suck the juices of fruit; and others pillage butchers' stalls, from which they often arrive with a piece of meat larger than even half of their own bodies.

When they return to their nest, they distribute a portion of their plunder to the females, to the males, and to such neuters as have been usefully occupied at home. As soon as a neuter enters the nest, it is surrounded by several Wasps, to each of which it freely gives a portion of the food it has brought. Those that have not been hunting for prey but have been sucking the juices of fruits, though they seem to return empty, fail not to regale their companions; for, after their arrival, they station themselves at the upper part of the nest, and discharge from their mouths two or three drops of clear liquid, which are immediately swallowed by the domestics.

The neuter Wasps are the smallest, the females are much larger and

heavier than these, and the males are of an intermediate size between the two. In the hive of the Honey-bee the number of females is extremely small; but in a Wasp's nest they often amount to more than three hundred.

The eggs are white, transparent, and of an oblong shape; but they differ in size, according to the kind of Wasps that are to proceed from them. At the end of eight days after they are deposited in the cells, the grubs are hatched. These demand the principal care of such Wasps as continue always in the nest. They are fed in the same manner as birds, by receiving, from time to time, a mouthful of food from the insects which have the care of them. It is astonishing to see with what industry and rapidity a female runs along the cells of a comb, and distributes to each worm a portion of nutriment. In proportion to the ages and condition of the worms, they are fed with liquid substance, or with solid food.

When a worm is so large as to occupy its whole cell, it is ready to be metamorphosed into a chrysalis. It then refuses all nourishment, and ceases to have any connexion with the Wasps in the nest. It closes the mouth of its cell with a fine silken cover. This operation is completed in three or four hours, and the animal remains a chrysalis nine or ten days. After this it destroys, with its teeth, the external cover of the cell, and issues forth a winged insect, which is either male, female, or neuter, according to the nature of the egg from which it was hatched. In a short time the Wasps newly transformed receive the food that is brought to them by the foragers from the fields. What is still more wonderful is, that in the course of even the first day after their transformation, the young Wasps have been observed to go into the fields, bring in provisions, and distribute them to the worms in the cells. A cell is no sooner abandoned by a young Wasp, than it is cleaned, trimmed, repaired by the old ones, and rendered in every respect proper for the reception of another egg.

Cells are constructed of different dimensions for the neuters, males, and females; and it is very remarkable, that those of the neuters are never intermixed with the cells destined for others.

About the beginning of October, every nest presents a strange scene of cruelty. At this season, the Wasps not only cease to bring nourishment to their young-ones, but they drag the grubs from their cells, and carry them out of the nest, where they are either killed by the Wasps, or perish from exposure to the weather and deprivation of food. This procedure would at first seem a strange violation of parental affection; but the intentions of Providence, though they often elude our researches, are never wrong. What appears to us cruel and unnatural, in this instinctive devastation committed annually by the Wasps, is perhaps an act of the greatest mercy that could have taken place. Wasps are not, like the Honey-bees, endowed with the instinct of laying up a store of provisions for winter If not prematurely destroyed by their parents, the young-ones must necessarily die a cruel and lingering death, occasioned by hunger. Hence this seemingly harsh conduct in the economy of Wasps, instead of affording an

exception to the universal benevolence and wisdom of nature, is, in reality, a most merciful effort of instinct.

Like the male Honey-bees, the male Wasps are destitute of stings, but the females and neuters have stings, the poisonous liquor of which, when introduced into any part of the human body, excites inflammation, and creates a considerable degree of pain. Their sting consists of a hollow and very sharp-pointed tube, having at its root a bag of pungent juice, which, in the act of stinging, is pressed out, and conveyed through the tube into the flesh. There are also two small, sharp, and bearded spears, lying, as in a sheath, within the tube. Dr. Derham counted, on the side of each spear, eight beards, which, he says, were formed somewhat like the beards of fish-hooks. These spears lie one with its points a little before the other in the sheath, to be ready, in all probability, to be first darted into the flesh; where, being once fixed, by means of its foremost beard, the other then strikes in also; and, in this manner, they alternately pierce deeper and deeper, their beards taking more and more hold in the flesh; after which the sting or sheath follows, in order to convey the poison into the wound.

OF THE BEES IN GENERAL.

THESE insects are very numerous, and differ considerably in their habits. Some of the species are found in extensive communities, which construct, with the utmost art, cells for their offspring, and repositories for their food; while others both dwell and work in solitude. The whole tribe live on the nectar of flowers, and on ripe fruit.

Their *larvæ* are soft and without feet, and the *chrysalis* resembles the perfect insect.

THE WOOD-PIERCING BEE.

The operations of the Wood-piercers merit our careful attention. In the spring of the year they frequent gardens, and search for rotten, or at least for dead wood, in order to make a habitation for their young-ones. They usually choose the decaying uprights of arbors, espaliers, or the props of vines; but they will sometime attack garden-seats, thick doors and window-shutters.

When the female of this species, (for in her operation she receives no assistance from the male,) has selected some old wooden post suited to her purpose, she begins her work by boring perpendicularly into it; when she has advanced about half an inch, she changes her direction, and then proceeds nearly parallel with its sides, for twelve or fifteen inches, making the hollow about half an inch in diameter. If the wood be sufficiently thick, she sometimes forms three or four of these long holes in its interior; a labor, which, for a single insect,

seems prodigious; and in the execution of it some weeks are often employed. On the ground, for about a foot from the place in which one of these Bees is working, little heaps of timber-dust are to be seen. These heaps daily increase in size, and the particles that compose them are almost as large as those produced by a hand-saw. The strong jaws of this insect are the only instruments of perforation which she employs. After the holes are prepared, they are divided into ten or twelve separate apartments, each about an inch deep, the roof of one serving for the bottom of another. The divisions are composed of particles of wood, cemented together by a glutinous substance from the animal's body. In making one of these she commences by gluing an annular plate of wood-dust, about the thickness of half-a crown, round the internal circumference of the cavity: to this plate she attaches a second, to the second a third, and so on till the whole floor is completed. Before each cell is closed, it is filled with a paste composed of the farina of flowers mixed with honey, and an egg is deposited in it. When the larva is hatched, it has scarcely room sufficient to turn itself in the cell; but as the paste is devoured, the space is enlarged so as to allow the animal to perform every necessary operation towards changing its state.

In a range of cells, the worms are necessarily of different ages, and of course of different sizes. Those in the lower cells are older than those in the upper; because, after the Bee has filled with paste, and enclosed the first cell, a considerable time is requisite to collect provisions, and to form partitions for every successive and superior cell. The former, therefore, must be transformed into nymphs and flies before the latter. These circumstances would almost appear to be foreseen by the mother; for if the undermost worm, which is the oldest, and soon transformed, were to force its way upward, which it could easily do, it would not only disturb, but would infallibly destroy all those lodged in the superior cells. But Providence has wisely prevented this devastation; for the head of the nymph, and consequently of the fly, is always placed in a downward direction. Its first instinctive movements must, consequently, be in that direction. That the young Bees may escape from their respective cells, the mother digs a hole at the bottom of the long tube, which makes a communication between the undermost cell and the open air. Sometimes a similar passage is made near the middle of the tube. By this contrivance as all the Bees instinctively endeavor to cut their way downward, they find an easy and convenient passage; for they have only to pierce the floor of their cells in order to make their escape, and this they do with their teeth very readily.

THE HIVE BEE.

In the formation of their combs, the present insects seem to resolve a problem which would not be a little puzzling to some geometricians, namely: "A quantity of wax being given, to make of it equal and similar cells of a determined capacity, but of the largest size in

proportion to the quantity of matter employed, and disposed in such a manner as to occupy in the hive the least possible space." Every part of this problem is completely executed by the Bees. By applying hexagonal cells to the sides of each other, no void spaces are left between them; and, though the same end may be accomplished by other figures, yet such would necessarily require a greater quantity of wax than these. Besides, hexagonal cells are best fitted to receive the cylindrical bodies of the larvæ. A comb consists of two strata of cells, applied to each other's ends. This arrangement both saves room in the hive, and gives a double entry into the cells of which the comb is composed.



THE HIVE BEES.

As a further saving of wax, and for preventing void spaces, the bases of the cells in one stratum of a comb, serve also for bases to the opposite stratum. In short, the more minutely the construction is examined, the more will the admiration of the observer be excited. The walls of the cells are so extremely thin, that their mouths might be thought in danger of suffering by the frequent entering and issuing of the Bees. To prevent this, the Bees make a kind of rim round the margin of each cell, and this rim is three or four times thicker than the walls.

It is difficult to perceive, even with the assistance of glass hives, the manner in which Bees operate when constructing their cells. They are so eager to afford mutual assistance, and for this purpose so many of them crowd together, and are perpetually succeeding each other, that their individual operations can seldom be distinctly observed. It has, however, been discovered that their two jaws are the only instruments they employ in modelling and polishing the wax. With a little patience and attention, we perceive cells just began: we likewise remark the quickness with which a Bee moves its teeth against a small portion of the cell. This portion the animal, by repeated strokes on each side, smooths, renders compact, and reduces to a proper thinness. While some individuals of the hive are lengthening their hexagonal tubes, others are laying the foundation of new ones. In certain circumstances, when extremely hurried, they do not complete their new cells, but leave them imperfect until they have begun a number sufficient for their present exigencies. When a Bee puts its head a little way into a cell, we easily perceive it, with the points of its teeth, scraping the walls, in order to detach such useless and irregular fragments, as may have been left in the work. Of these fragments the Bee forms a ball, about the size of a pin's head. It issues from the cell, and carries this wax to another part of the work, where it is wanted: it no sooner leaves the cell than it is succeeded by another Bee, which performs a similar office: and in this manner the work is successively carried on, till the cell is completely polished.

Their mode of working, and the disposition and division of their labor, when put into an empty hive, are very wonderful. They

immediately begin to lay the foundations of their combs. This is an operation, which they execute with surprising quickness and alacrity Soon after they have begun to construct one comb, they divide into two or three companies, each of which, in different parts of the hive, is occupied in similar operations. By this division of labor, a great number of Bees have an opportunity of being employed at the same time, and consequently, the common work is sooner finished. The combs are generally arranged in a direction parallel to each other An interval or street between them is always left, that the Bees may have a free passage, and an easy communication with the different combs in the hive. These streets are just wide enough to allow two Bees to pass one another. Besides these parallel streets, the Bees to shorten their journey when working, leave several cross passages, which are always covered.

They are extremely solicitous to prevent insects of any kind from getting admittance into their hives. To accomplish this purpose, and to shut out the cold, they carefully examine every part of their hive; and if they discover any holes or chinks, they immediately paste them firmly up with a resinous substance, which differs considerably from wax. This substance was known to the ancients by the name of *propolis*, or bee-glue. Bees use the propolis for rendering their hives more close and perfect, in preference to wax, because it is more durable, and because it more powerfully resists the vicissitudes of weather than that. This glue is not, like the wax, formed by an animal process. The Bees collect it from different trees, such as the poplar, birch, and willow. It is a complete production of nature, and requires no additional manufacture from the animals by which it is employed. After a Bee has procured a quantity sufficient to fill the cavities of its two hind legs, it repairs to the hive. Two of its companions instantly draw out the propolis, and apply it to fill up such chinks, holes, or other deficiencies, as they find in their habitation. But this is not the only use to which Bees apply the propolis. They are extremely solicitous to remove such insects or foreign bodies, as happen to get admission into the hive. When these are so light as not to exceed their powers, they first kill the insect with their stings, and then drag it out with their teeth. But it sometimes happens, that an ill-fated snail creeps into the hive. This is no sooner perceived, than it is attacked on all sides, and stung to death. But how are the Bees to carry out so heavy a burden? Such a labor would be in vain. To prevent the noxious odors consequent on its putrefaction, they immediately embalm it, by covering every part of its body with propolis, through which no effluvia can escape.

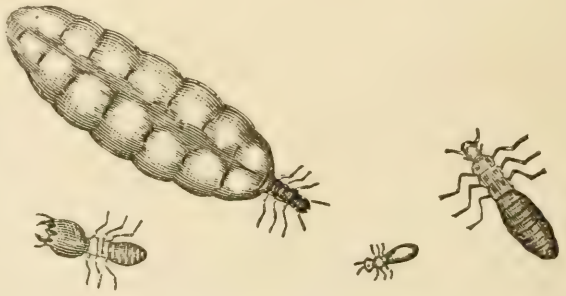
But propolis, and the materials for making wax, are not the only substances, which these industrious animals have to collect. As, during the whole winter, and even during many days in summer, the Bees are prevented by the weather from going abroad in quest of provisions, they are under the necessity of collecting and amassing, in cells destined for the purpose, large quantities of honey. This, by means of their trunk, they extract from the nectariferous glands of flowers The trunk of the Bee is a kind of rough, cartilaginous tongue.

After collecting a few small drops of honey with this, the animal carries them to its mouth, and swallows them. From the gullet they pass into the first stomach. This when filled with honey, assumes the figure of an oblong bladder, the membrane of which is so thin and transparent, that it allows the color of the liquid it contains to be distinctly seen. As soon as their stomach is full, the Bees return directly to the hive, and disgorge into a cell the whole of the honey they have collected. It, however, not unfrequently happens, that on its way to the hive the Bee is accosted by a hungry companion. How the one manages to communicate its wants to the other, is not known. But the fact is certain, that when two Bees meet in this situation, they mutually stop, and the one whose stomach is full of honey, extends its trunk, opens its mouth, and like a ruminating animal, forces up the honey. The hungry Bee, with the point of its trunk, sucks the honey from the other's mouth. When not stopped on the road, the Bee, as before stated, proceeds to the hive, and in the same manner offers its honey to those who are at work, as if it meant to prevent the necessity of their quitting their labor in order to go in quest of food. In bad weather, the Bees feed on the honey laid up in open cells; but they never touch their reservoirs, while their companions are enabled to supply them with fresh honey from the fields. The mouths of those cells, which are destined for preserving honey during the winter, they always cover with a lid or thin plate of wax.



THE QUEEN BEE.

How numerous soever the Bees in one swarm may appear to be they all originate from a single parent. It is indeed surprising, that one small insect should, in a few months, give birth to so many young-ones; but, on opening her body at a certain season of the year, eggs to the number of many thousands may be found contained in it.



THE QUEEN BEE AND PREGNANT QUEEN BEE.

The queen is easily distinguished from the rest by the size and shape of her body. On her depends the welfare of the whole community: and, by the attention that is paid to all her movements, it is evident how much they depend on her security. At times, attended by a numerous retinue she is seen in the act of marching from cell to cell, plunging the extremity of her body into each of them, and leaving in each an egg.

A day or two after this egg is deposited, the grub is excluded from

the shell, having the shape of a maggot rolled up in a ring, and lying softly on a bed of a whitish-colored jelly, on which it begins to feed.



THE DRONE BEE.

The common Bees then attend with astonishing tenderness and anxiety: they furnish it with food, and watch over it with unremitting assiduity. In about six days the grub attains its full growth, when its affectionate attendants shut up the mouth of its apartment with wax, in order to secure it from injury. Thus enclosed, it soon begins to line the walls of its cell with a silken tapestry, in which it undergoes its last transformation.

When it first crawls forth a winged insect, it is very weak and inactive; but in the course of a few hours, it acquires strength enough to fly off to its labor. On its emerging from the cell, the officious Bees flock round it, and lick up its moisture with their tongues. One party brings honey for it to feed upon; and another is employed in cleansing the cell, and carrying out the filth, for the purpose of preparing it for a new inhabitant.

The neuter Bees in a hive amount to the number of sixteen or eighteen thousand. These are all armed with stings. The males are called *Drones:* they are unarmed, and are always killed by the neuters, about the month of September.

THE CARDING BEE.

This Bee is yellow, with the hair of the thorax somewhat fawn-colored.



THE CARDING BEE.

Nearly all the Carding Bees perish in the winter: a few of the females only survive. These usually make their appearance early in the spring, as soon as the catkins of the willows are in blossom; upon which, at this time, they may be seen collecting honey from the female, and pollen from the male catkins.

When these animals, of any sex, are walking on the ground, if a finger be moved to them, they lift up three legs on one side, by way of defence; which gives them a very grotesque appearance.

Their nests are usually formed in meadows and pastures, sometimes in groves and hedge-rows, where the soil is entangled with roots; but now and then these are found in heaps of stones. When they do not meet with an accidental cavity ready made, the Carding Bees, with great labor, excavate one. This they cover with a thick convex vault of moss, sometimes casing the interior with a kind of coarse wax, to keep out the wet. At the lower part of the nest there is an opening for the inhabitants to go in and out at. This entrance is often through a long gallery, or covered way, a foot or upwards in length, by which the nest is concealed from observation.

The mode in which they transport the moss employed in the for-

mation of their nest, is singular. When they have discovered a parcel fitted to their purpose, and conveniently situated, they place themselves in a line, with their backs turned towards the nest. The foremost lays hold of some with her jaws, and clears it, bit by bit, with her fore-feet. When this is sufficiently disentangled, she drives it with her feet under her body, and as far as possible beyond, to the second Bee. The second pushes it on to the third and so on. Thus small heaps of prepared moss are conveyed, by a file of four or five insects, to the nest, where they are wrought and interwoven with the greatest dexterity by those that remain within.

OF THE ANTS IN GENERAL.

ALL the species of Ants known in this country are gregarious; and, like the bees, consist of males, females, and neuters; the latter alone are the laborers. These build in the ground an oblong nest, in which there are various passages and apartments. In the formation of the nest every individual is occupied: some are employed in securing a firm and durable groundwork, by mixing the earth with a sort of glue produced in their bodies, others collect little bits of twigs to serve as rafters, placing them over their passages to support the covering; others again lay pieces across these, and place on them rushes, weeds and dried grass. The latter they secure so firmly, as completely to turn off the water from their magazines.

From the eggs of these insects proceed the larvæ, a small kind of maggots without legs, which soon transform into white chrysalids. The latter are generally called *Ants' eggs*, and are frequently used for the feeding of young Pheasants, Partridges, and Nightingales.

The males are much smaller than the females, and seldom frequent the common habitation. All the labor which the females undergo, is the laying of eggs; and the cold weather of winter always destroys them. The neuters, or laboring Ants, which alone are able to struggle through the winter, pass this season in a torpid state. The females and neuters are each armed with stings.

It is said that the Ants of *tropical climates* are never torpid; that they build their nests with a dexterity, lay up provisions, and submit to regulations, that are entirely unknown among those of Europe. They are, in every respect, a more formidable race. Their stings produce insupportable pain, and their depredations do infinite mischief. Sheep, hens, and even rats, by loitering too near their habitations, are often destroyed by them.

THE HORSE EMMET, OR GREAT HILL-ANT.

It is chiefly near the old and decayed trunks of trees that the Hill-ants form their settlements. Their nest consists of a great number of apartments. In these they have their magazines, and bring forth and rear their offspring.



ANTS' NEST.

It is the peculiar habit of the Hill-ants to collect a vast quantity of pieces of dry sticks, chips, bits of straw, and other rubbish, which they carry to the surface of their colonies, and there place together in heaps, which sometimes become immensely large. This employment they renew every spring, and continue through the whole summer.

THE RED ANT.

The lodgments of this species are often found under flat stones and rubbish; and not unfrequently in the forsaken habitations of Moles. In the latter of these situations, the process of forming their nest is curious. They cut the earth into small parcels, and incrust these with the blades of grass. As the blades, towards the month of June (when this work is in progress) grow every day, so the Ants advance their labors in proportion, By this contrivance, in somewhat more than a month they have a number of little mounts, each about six inches high. The architecture of these is slight, and the demolition easy; but, without any serious accident, they last long enough to answer every purpose for which they were formed. The nests of such Red Ants as reside under stones or pavements, in old walls, or under rubbish, do not require out-works, and consequently the insects do not here form them, but are content with the covering they find.

In collecting their stores, these creatures may often be observed in full employment; one of them loaded with a grain of wheat, another with a dead fly, and several together hauling along the body of some larger insect. Whenever they meet with any food too large to admit of being dragged away, they devour so much of it upon the spot, as to reduce it to a bulk sufficiently small for them to carry.

DIPTEROUS INSECTS.

THE Linnean order *Diptera,* comprises those insects that have only two wings, each furnished at its base with a poise or balancer.

OF THE TIPULÆ, OR CRANE-FLIES.

IN their general form, the Tipulæ have a general resemblance to the Gnats, but they are easily distinguished from those insects, by having expanded wings, and being destitute of the long proboscis which is so conspicuous in the Gnats. From the commencement of spring until the beginning of autumn, the larger kinds of Tipulæ are to be seen in great numbers in pastures and meadows. Some of the species lay their eggs upon the ground amongst the grass, and others in the hollows of decayed trees. The *larvæ* are without feet, soft, and cylindrical.

Both the *larvæ* and *chrysalids* of the smaller Tipulæ are found in water, and are very various, both in size and color. Some are furnished with a pair of arms; and others are enclosed in cylindrical tubes, open at the ends. The latter swim nimbly, but the former always remain in holes which they have formed in the banks of rivulets. Some of the species spin a silken case round part of their body. Their whole frame is, in general, so very tender, that, in some of the species, a touch only is sufficient to crush them.

OF THE FLIES IN GENERAL.

THE mouth of these insects has a soft, fleshy proboscis, with two equal lips; and the sucker is furnished with bristles. The antennæ are generally very short.

The appellation of Fly has been given almost exclusively to these insects, probably from their being much more common than any others. The larvæ of some of the species live in water; those of others are found on trees, where they devour aphides or plant-lice; and others in putrid flesh, cheese, &c. Most of the flies are torpid during the winter, and therefore lay up no provision for their nourishment in the cold season. At the decline of the year, when the mornings and evenings become chilly, many of them come for warmth into houses, and swarm in the windows. At first they appear very brisk and alert; but as they become torpid they seem to move with difficulty, and at last are scarcely able to lift their legs. These seem as if they were glued to the glass; and by degrees many of the insects do actually stick on the glass till they die. It has been observed that some of the flies, besides sharp, hooked nails, have skinny palms or flaps to their feet, by which they adhere to glass and other smooth bodies, and walk on ceilings with their backs downward. They are enabled to do this, by the pressure upon those flaps by the atmosphere; the weight of which they easily overcome in warm weather, when they are brisk and alert. But towards the end of the year this resistance becomes too mighty for their diminished strength; and we see flies laboring along, and lugging their feet on windows as if they stuck fast to the glass; and it is with the utmost difficulty they can draw one foot after another, and disengage their hollow caps from the slippery surface. On a principle exactly similar to this it is, that boys, by way of amusement, carry heavy weights, by only a piece of wet leather at the end of a string, clapped close to the surface of a stone.

It is a very extraordinary fact, that flies have been known to remain immersed in strong liquors, even for several months, and afterwards, on being taken out, and exposed to the air, have again revived. Some, we are told by Dr. Franklin, were drowned in Madeira wine, when bottled in Virginia to be sent to England. At the opening of a bottle of this wine at a friend's house in London, many months afterwards, three drowned flies fell into the first glass that was filled. The Doctor says, that having heard it remarked that drowned flies were capable of being revived by the rays of the sun, he proposed making the experiment. They were therefore exposed to the sun, upon the seive which had been employed to strain them from the wine. In less than three hours two of them, by degrees, began to exhibit signs of life. Some convulsive motions were first observed in the thighs; and at length they raised themselves upon their legs, wiped their eyes with their fore-feet, and, soon afterwards, flew away. The Rev. Mr. Kirby informs me, that he has made the same observation on flies

taken out of home-made wines. He says that many have recovered, after having been twelve months immersed.

THE COMMON FLESH-FLY.

It is a fact not generally known, that this is a viviparous insect, depositing its offspring, in a living state, on the meat in our shambles and larders. The young-ones appear under the same worm-like form, as the grubs produced from the Blue Flesh-fly. They feed as those do, increase in size, undergo all their transformations in the same manner, and even in the fly-state appear but little different.

THE HESSIAN FLY.

Among the various causes of alarm experienced by the farmer in the course of his rural labors, few are more powerful, though many more justly so, than the larvæ or grubs of this little fly. These are lodged and nourished within the stems of wheat and rye, just above the root, which they entirely destroy.

THE CHEESE-FLY.

The larvæ of these flies are the troublesome maggots found in cheese, and so well known to housewives under the name of *Hoppers*. They proceed from eggs deposited in the crevices or holes of the cheese by the parent fly.

This maggot is surprisingly strong and vigorous, and, when disturbed leaps to a considerable distance. To do this, it erects itself on its tail, and, bending its head into a circle, fixes two black claws, which are situated at the end of the tail into two cavities formed for their reception at the back of the head. It then exerts its muscular powers, and, in suddenly extending its body, throws itself, for its size, to a vast distance. One of these insects, which was not the fourth of an inch long, has been known to leap thus, out of a box six inches deep, or to twenty-four times its own length.

OF THE TABANUS, OR WHAME-FLY TRIBE.

The insects of the present tribe subsist on the blood of animals, which they suck with great avidity, by means of their proboscis. They are chiefly active during the hottest weather of summer. In most of the species the eyes are beautifully colored. Wet meadows and moist woods are the places in which they principally abound The larvæ of some of the species live underground.

THE HORSE-FLY, AND GREEN-EYED WHAME-FLY.

The puncture of both these insects is extremely keen and painful. During the summer-time, the former torment horses and cattle in such a degree, as sometimes to throw them into a state of the utmost agitation and alarm. They are more abundant in wet meadows and pastures than in other places. Mankind are also not unfrequently attacked by them.

The *Green-eyed* species often torment mankind. Those persons who are accustomed to walk in shady lanes, and in woods, during the hot weather of June and July, know well what it is to suffer from their attacks.

OF THE GNATS.

THESE insects principally frequent woods and watery places, and, in many parts, are known to the country people by the name of *Midges*. They live by sucking the blood and juices of the larger animals.

Their *larvæ* are very common in stagnant waters. The bodies of these are composed of nine segments, the last of which is furnished with a small cylindrical tube, through which they breathe; and they frequently rise to the surface of the water for that purpose. The head of the *chrysalis* is bent towards the breast, so as to throw the thorax in front: in this the respiratory tubes are situated, near the head. The last segment of the abdomen terminates in a kind of flat fin, by means of which the creature performs all its motions in the water.

THE COMMON GNAT.

Few insects are better known than this species of Gnat, and there are not many that afford a more interesting history.

The female deposits her eggs on the surface of the water, and surrounds them with a kind of unctious matter, which prevents them from sinking; and she at the same time fastens them with a thread to the bottom, to prevent them from being floated away from a place, the warmth of which is proper for their production, to any other where the water may be too cold, or the animals their enemies, too numerous. In this state, therefore, they resemble a buoy that is fixed by an anchor. As they come to maturity they sink deeper; and at last, when they leave the egg, they creep, in the form of grubs, at the bottom.

It is impossible to behold and not admire the beautiful structure of the proboscis, through which the Gnat draws the juices that afford it

nourishment. The naked eye is only able to discover a long and slender tube, containing five or six spiculæ of exquisite fineness. These spiculæ, introduced into the veins of animals, act like the suckers of a pump, and cause the blood to ascend. The insect injects a small quantity of liquid into the wound, by which the blood is made more fluid. The Gnat, as it sucks, swells, grows red, and does not quit its hold till it has gorged itself. The liquor it has injected causes a disagreeable itching, which may in some degree be removed by volatile alkali, or by immediately rubbing and washing the place with cold water.

THE MUSQUITO-FLY.

The Musquito-fly is nothing more than a large variety of the Common Gnat. These insects are found in great abundance in the woody and marshy parts of all hot climates; and, during the short summer throughout Lapland, Norway, and Finland, and other countries equally near the Pole.

It is the female only that bites and sucks the blood; and this operation is so severe, as to swell and blister the skin in a violent manner and sometimes even to leave obstinate sores.

The lowest class of people, in all the climates where Musquitoes abound, keep them out of their huts, during the day-time, by burning there a continual fire: the Laplander, when in bed, has a better contrivance to defend himself from their stings. He fixes a leather thong to the poles of his tent, this raises his canvass quilt to a proper height, so that its sides or edges touch the ground. Under this he creeps and, passes the night in security. When Mr. Acerbi and his friends arrived in a cottage in the village of Killare, in Lapland, the first favor the women conferred on them, was to light a fire, and fill the room so full of smoke, that it brought tears from their eyes. This was done to deliver them from the molestation of the Musquitoes; and, as a means of effectual prevention, they made a second fire, near the entrance of the apartment, to stop the fresh myriads, which would otherwise have rushed in upon them from without. The buzzing of Musquitoes is so loud, as to disturb the rest of persons in the night, almost as much as would be done by their bite.

OF THE HIPPOBOSCÆ, OR SPIDER-FLIES.

The Hippoboscæ form a connecting link between the two-winged and the apterous insects. By some authors they have been denominated *mouches araignées*, or *spider-flies*, from a distant resemblance which some of them have to Spiders.

A few of the species are found in woods and marshy places; but the greater number of them infest the bodies either of quadrupeds or birds.

APTEROUS INSECTS.

THE Linnean order *Aptera*, comprises all such insects as are destitute of wings in both sexes.

OF THE TERMES TRIBE.

THE present tribe is arranged by Linnæus among the Apterous Insects: but it might with equal propriety have been inserted with the Neuroptera or Hymenoptera; for the males of most of the species, in a perfect state, have either two or four wings.

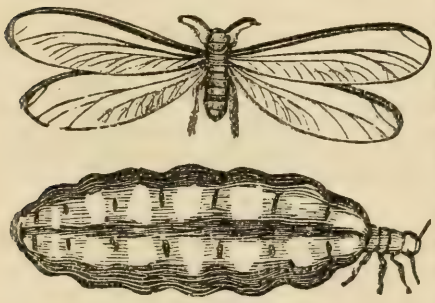
THE DEATH-WATCH TERMES.

In old wood, decayed furniture, museums, and neglected books, these insects are almost always to be found; and both the male and female, for the purpose of attracting each other, have the power of making a ticking noise, not unlike that of a watch.

The Death-watch Termes seem to have very little alliance to the following species.

THE WHITE ANTS.

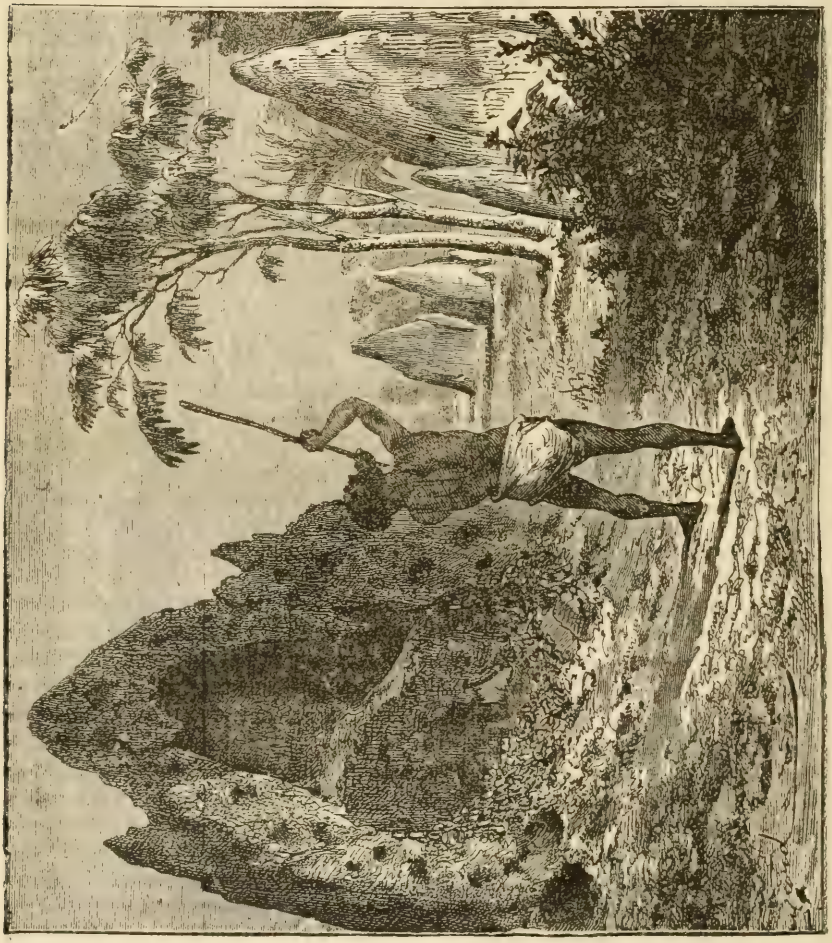
The animals of this extraordinary community are found in the East Indies, and in many parts of Africa and South America, where their depredations are greatly dreaded by the inhabitants. They are naturally divided into three orders. 1. The working insects, 2. The fighters, or *soldiers*, which perform no other labor than such as is necessary in defence of the nests; and 3. The winged or perfect insects, which are male and female, and capable of multiplying the species.



WHITE ANT.

The nests, or rather *hills*, of these Ants, (for they are often elevated

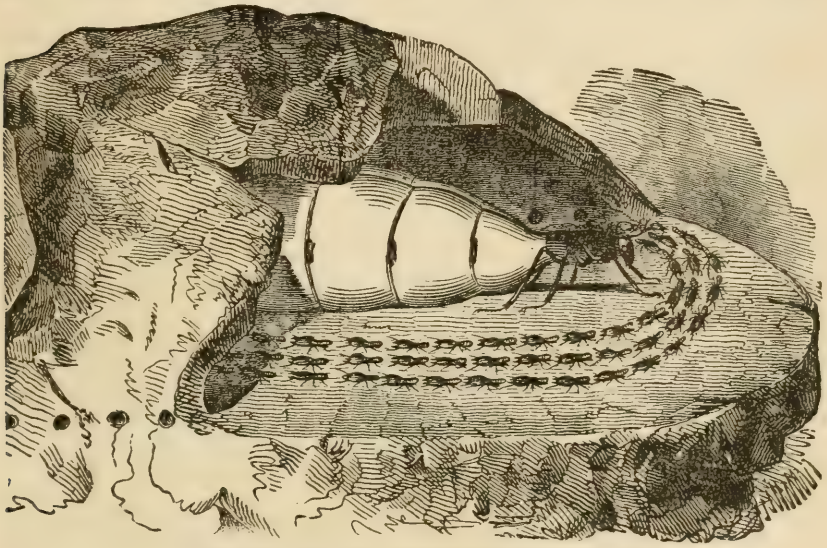
ten or twelve feet above the surface of the ground,) are nearly of a conical shape; and sometimes so numerous, as at a little distance to appear like villages of the negroes. Jobson in his history of Gambia, says, that some of them are twenty feet high, and that he and his companions have often hidden themselves behind them, for the purpose of shooting Deer and other wild animals. Each hill is composed of an exterior and an interior part. The exterior cover is a large



clay shell, shaped like a dome, of strength and magnitude sufficient to enclose and protect the interior building from the injuries of the weather, and to defend its numerous inhabitants from the attacks of natural or accidental enemies.

When a breach is made, by an axe or other instrument, in any of the walls, the first object that attracts attention, is the behaviour of the soldiers or fighting insects. Immediately after the blow is given, a soldier comes out, walks about the breach, and seems to examine

the nature of the enemy, or the cause of the attack. He then goes into the hill, gives the alarm, and, in a short time, large bodies of soldiers rush out as fast as the breach will permit. It is not easy to describe the fury that actuates these fighting insects. In their eagerness to repel the enemy, they frequently tumble down the sides of the hill, but quickly recover themselves, and bite every thing they encounter.



QUEEN WHITE ANT, WITH LABORERS CARRYING OFF HER EGGS.

Allusion has already been made to instances in which female insects are larger than males, but this is nothing compared with the prodigious difference between the sexes of (Termas Fatale) and other species of White Ants, whose males are often many times less than the females, when the latter are distended with eggs. When the business of oviposition commences, they take the eggs from the female and place them in the nurseries prepared for their reception. Her abdomen now begins gradually to extend, till, in process of time, it is enlarged to one thousand five hundred or two thousand times the size of the rest of her body, and her bulk equal to that of twenty or thirty thousand workers. This part, often more than three inches in length, is now a mass of eggs, making long circumvolutions through numberless slender serpentine vessels, which, like the undulations of water, produce a perpetual rise and fall over the whole surface of the abdomen, and occasion a constant extrusion of the eggs. The laborers of the White Ants attend the queen while she is laying, and that with the utmost care; for, as she cannot then move about, they are under the necessity of carrying off the eggs, as they are laid, to the nurseries. The extraordinary labour which this requires in the community may be understood, when, according to Smeathman, she lays sixty eggs in a minute, which will amount to 86,400 in a day, and 31,536,000 in a year. These insects have generally been called "Ants," probably on account of the similarity of

their manner of living, and their skilful and diligent labor; but they are by no means the same kind of insects. They certainly not only equal but excel Ants, Bees, Wasps and Beavers in the art of building, and, if we take into account the comparative size of the architects, we find, on comparing the hillocks constructed by these insects with the most colossal works of man, that the result is calculated to awaken in us sentiments of humility. The great pyramid of Cheops in its original state, before the base became covered by the accumulation of sand, was about four hundred and eighty feet in height. It was, therefore, about ninety-six times the height of a man, assuming the average stature of Africans to be five feet. The hillock which the termites raise are about a thousand times higher than the insects which construct them, so that these edifices of the White Ants are relatively many times higher than the loftiest of our monuments.

These artificial mounds are surprisingly strong; they are but of small circumference, compared with their height, and when finished are pointed at the top, so that you might imagine, to look at them, they could be blown down by a violent wind; but, in reality, they are proof against most assaults.

While they are still in the course of construction, and when their domes are accessible to the wild bulls, these animals may often be seen standing on their summits as sentinels to the rest of the herd. In some regions their magnitude, regularity, and numbers, make them resemble an assemblage of negro huts.

OF THE LOUSE TRIBE.

Lice live on animal juices, which they extract from living bodies by means of their sucker. The *larva* and *pupa* resemble the perfect insect.

The mouth in these animals is formed by a retractile recurved sucker, without a proboscis. There are no feelers, and the antennæ are about the length of the thorax. The abdomen is somewhat flattened; and the legs, which are six in number, are formed not for leaping, but for running and climbing.

THE COMMON LOUSE.

When we examine the human Louse with the microscope, its external deformity excites disgust. The forepart of its head is somewhat oblong, while the hind part is rounded. The skin is hard and transparent, with here and there a few bristly hairs. On each side of its head are two antennæ or horns, jointed, and covered with bristly hair; and behind these are the eyes, which are large and black. The neck is short, and the breast divided into three parts; on each side of which are three legs, armed at the end with small claws, by which the animal is enabled to lay hold of different objects. The trunk, or proboscis, is generally concealed in its tube: this is very sharp, and furnished towards its upper part, with a few reversed

prickles. By means of this the Louse feeds; and, when it is engaged in sucking any animal, the blood may be seen, through the transparency of its external covering, to rush like a torrent into the stomach. Through the skin its stomach and intestines are visible, as well as the ramifications of the tracheæ or respiratory tubes, which appear dispersed, in a beautiful manner, throughout various parts of the animal.

Scarcely any creature multiplies so quickly as this unwelcome intruder. It has been asserted that a Louse becomes a grandfather in the space of twenty-four hours. This fact cannot be ascertained; but nothing is more true than that the moment the nit, which is no other than the egg of the Louse, gets rid of its superfluous moisture, and throws off its shell, it begins in its turn to breed. Nothing so much prevents the increase of this nauseous animal, as cold, and want of humidity.

OF THE FLEAS IN GENERAL.

THE mouth of these insects is without either jaws or feelers: it has only a long, inflected proboscis, which conceals a single bristle. The antennæ are beaded; the abdomen is compressed sideways; and the legs are six in number, and formed for leaping.

The *larvæ* are white, cylindrical, and without feet, but are very active little creatures. Under the tail there are two small spines. The *chrysalis* is motionless, but in appearance is not unlike the perfect insect. The two following species are all that have been yet discovered.

THE COMMON FLEA.

Notwithstanding the general disapprobation of this insect, it has certainly something pleasing in its appearance. When examined with a microscope, it will be seen to have a small head, large eyes, and two short, four-jointed antennæ, between which is situated the trunk, or proboscis. The body appears enveloped in a shelly armor, which is always clean and bright: this is beset at the segments with many sharp bristles.



THE COMMON FLEA.

All the motions of this insect indicate agility and elegance; and its muscular power is so extraordinary as justly to excite our wonder. We know no animal whose muscular strength can be put in competition with that of a Flea; for, on a moderate computation, it is known to leap to a distance of at least two hundred times its own length.

There is no proportion between the power and the size of the insect tribes. Had man an equal degree of strength, bulk for bulk, with a Louse or a Flea, the history of Samson would no longer be

miraculous. A Flea will drag after it a chain a hundred times heavier than itself; and, to compensate for this power, will eat ten times its own weight of provisions in a day. Mr. Boverich, an ingenious watchmaker, who some years ago lived in London, exhibited to the public a little ivory chaise, with four wheels, and all its proper apparatus, and a man sitting on the box, all of which were drawn by a single Flea.

This little animal is produced from eggs which the females stick fast, by a kind of glutinous matter, to the roots of the hairs of cats, dogs, and other animals; or to the wool in blankets, rugs, or other similar furniture. Of these eggs the females lay ten or twelve a day, for several days successively; and they are hatched in the same order, five or six days after being laid.

From the eggs come forth, not perfect Fleas, but little whitish worms, or maggots, whose bodies have annular divisions, and are thinly covered with long hairs.

In eleven days from their being hatched, they cease to eat, and lie as though they were dying; but, if viewed in this state with a microscope, they will be found weaving a silken covering around them, in which they are to change into a chrysalid form. They continue nine days in this shape, at first white, and afterwards by degrees darkening their color as they acquire firmness and strength. As soon as they issue from their bag, they become perfect Fleas, and are able to leap away.

THE PENETRATING FLEA, OR CHIGOE.

This is a troublesome insect, too well known in many parts of this country. It is so small as to be almost imperceptible. Its legs have not the elasticity of those of Fleas; for, if the Chigoes had as great powers of leaping as Fleas, few creatures could escape their attack. They are always found among dust, and particularly in filthy places; they fix themselves on the legs, to the soles of the feet, and even to the fingers.



THE CHIGOE.

This creature pierces the skin so subtilely that the person is not sensible of the attack; nor is this to be perceived till the insect begins to extend itself. At first, it is not difficult to extract it; but, although it may only have introduced its head, it makes so firm a lodgment that a part of the skin must be sacrificed before it will quit its hold.

"The Chigoe," says Stedman, "is a kind of small Sand-flea, common in Surinam, which gets in between the skin and the flesh without its being felt, and generally under the nails of the toes: where, while it feeds, it keeps growing till it becomes of the size of a large pea, causing no further pain than a disagreeable itching. In process of time its operation appears in the form of a small bladder, in which are deposited thousands of eggs or nits, and which, if it breaks, produce so many young Chigoes, that in course of time create running

ulcers, which are often of very dangerous consequence to the patient, so much so, indeed, that he knew a soldier, the soles of whose feet were obliged to be cut away before he could recover; and some men have lost their limbs by amputation; nay, even their lives, by having neglected, in time to root out these abominable vermin. The moment, therefore, that a redness and itching, more than usual, are perceived, it is time to extract the Chigoe that occasions them. This is done with a sharp-pointed needle, taking care not to occasion unnecessary pain, and to prevent the Chigoe, or bladder, from breaking in the wound. Tobacco ashes are put into the orifice, by which, in a little time, the sore is perfectly healed."

OF THE TICKS IN GENERAL.

THESE troublesome insects live chiefly on other animals: some of them, however, inhabit the water, and others subsist on various vegetable substances. They are to be found every where, and in immense numbers. The *larvæ* and *chrysalids* have each six feet.

Their mouth is not furnished with a proboscis, but the sucker has a two-valved, cylindrical sheath. They have two compressed feelers, as long as the sucker; two eyes, one on each side of the head; and eight legs.

THE CHEESE-MITE.

To the naked eye, these minute creatures appear little more than moving particles of dust; but on the application of the microscope they are found to be perfect insects, performing all the regular animal functions.



THE CHEESE-MITE.

The females, which are easily distinguished from the males, are oviparous. The eggs are so minute, that on a tolerably accurate calculation it appears, that *ninety millions* of them would not fill the shell of a pigeon's egg.

Mites are very quick-sighted; and when once they have been touched with a pin, it is easy to perceive a great degree of cunning exerted to avoid a second touch. They are extremely voracious animals, and are often observed even to devour each other; and so very tenacious are they of life, that they have been kept alive many months between two concave glasses, by which they were applied to a microscope.

THE DOG-TICK.

In thickets and heaths these Ticks are sometimes very abundant. Hence it is that animals which frequent such places, and particularly dogs of the chase, are much exposed to their attacks.

Their abdomen is quite flat and thin when they have been long without nourishment; but, when adhering to the body of an animal, they soon fill themselves with blood, and their size then becomes so much enlarged, that any one unacquainted with their habits and appearance, would scarcely recognise them.

Their motions are extremely slow and heavy, but, in compensation for this apparent defect, they are able to adhere closely and strongly even to the most solid bodies. They are very tenacious of life; and their skin is so hard and tough, that they are not easily susceptible of injury. Long after they are deprived of their head, they give indications of remaining life.

In the destruction of these insects, mercurial preparations have been employed with success.

OF THE SPIDERS IN GENERAL.

THESE insects, which are so remarkable, on account of their industry and manners of life, are generally viewed with an aversion only to be accounted for by the unpleasing impressions that are made upon us in early life. These impressions are, in general, communicated by persons ill-qualified to give the mind that direction which is necessary for the purposes of life. Even many naturalists have complained that this aversion has deterred them from observing and accurately examining the habits of these insects; and those who have undertaken to do so, have generally been at much trouble to overcome their antipathy.

Spiders prey on other insects, and do not, in all cases, spare even their own species. There is little doubt but their bite is venomous: and it is said that a fly which has once felt it can never be recovered, but soon dies in convulsions. Many of the species have been swallowed, without any subsequent inconvenience.

Some of the Spiders spin webs for the purpose of catching their prey; but others seize it by surprise. They are all able to sustain an abstinence from food for a great length of time; some for even six months or upwards.

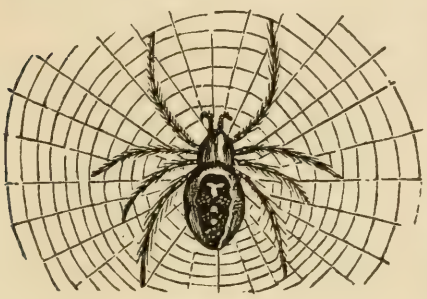
They frequently change their skins. The *larvæ* and *pupæ* have each eight legs, and differ in no respect from the perfect insect.

THE HOUSE-SPIDER.

The abdomen of these insects is nearly oval, of a brown color, and marked with five black and almost contiguous spots.

House-spiders feed principally on flies; and the web by which they are enabled to entangle these insects is a surprising part of the animal economy. For the purpose of forming this web, they are supplied with a quantity of glutinous matter contained in a receptacle near the extremity of their bodies; and, for spinning it into thread, they have

five teats, the orifices of which the insects have the power of contracting and dilating at pleasure. When they enter on the construction of this curious fabric, they fix on a spot apparently calculated both for plunder and security. The animal then distils one little drop of glutinous liquor, which is very tenacious; and creeping along the wall, and joining its thread as it proceeds, it darts itself to the opposite side, where the other end is to be fastened. The first thread thus formed, being drawn tight and fixed at each end, the Spider runs on it backward and forward, still doubling and strengthening it, as on this depends the stability of the whole. The scaffolding thus completed, it makes a number of threads parallel to the first, and then crosses them with others: the clammy substance of which they are formed serves, when first made, to bind them to each other. At the bottom of the web a kind of funnel is constructed, in which the little creature lies concealed. In this den of destruction it watches with unremitted assiduity till its prey is entangled; when this is the case it instantly darts upon its victim and deprives it of life.



HOUSE-SPIDER.

The webs of Spiders differ from those woven by any human artist in this circumstance: in our work, the threads extended in length are interlaced with those that are carried on transversely; whereas, the threads of a Spider's woof only cross the threads of the warp, and are glued to them in the points where they mutually touch, and are not either inserted or interwoven.

The threads along the border of the work are doubled or trebled, by the Spider's opening all her teats at once, and gluing several threads one over another; sensible that the extremity of the web ought to be hemmed and fortified, in order to preserve it from being torn. She likewise further secures and supports it with strong loops, or double threads, which she fixes all around it, and which hinder it from being the sport of the winds.

From time to time she finds it necessary to clear away the dust, which would otherwise incommode her web, and she sweeps the whole by giving it a shake with her paw; but in doing this she so nicely proportions the force of the blow to the strength of the work, that nothing is ever broken.

From all parts of the web are drawn several threads, which terminate, like rays in a centre, at the place of her concealment. The vibration of any of these threads is communicated to her, and gives her notice whenever there is game in the net, and accordingly she springs upon it in an instant. She derives another advantage from this retreat under her web; she there feasts on her prey in full security. It also gives her the power of concealing the carcasses, and not leav

ing in the purlieus any traces of her barbarity, capable of intimating the place of her retreat, and inspiring other insects with a dread of approaching it.

This Spider is furnished with a pair of sharp hooked fangs, enclosed, when at rest, in cases in the fore-part of her head. With these weapons, (which a good glass will discover to have a small slit or orifice in each point,) she seizes and pierces such insects as entangle themselves in her web; and infuses a poisonous liquid into the wound. This poison must be very deleterious; for flies, and many other insects, may be mutilated by depriving them of their legs, wings, and even cutting their bodies through the very middle of the abdomen, and in that condition they will survive several days; but this liquid in a moment kills them.

When two Spiders of the same size meet in combat, neither of them will yield: they hold each other by their fangs so fast, that, in general, one of the two must die before they are separated.

The Spider, the Ptinus, and many insects of the beetle kind, exhibit an instinct of very extraordinary nature. When put in terror by a touch of the finger, the Spider runs off with great swiftness; but if he find that, whatever direction he takes, he is opposed by another finger, he then seems to despair of being able to escape, contracts his limbs and body, lies motionless, and counterfeits every symptom of death. "In this situation," says Mr. Smellie, "I have pierced Spiders with pins, and torn them to pieces, without their indicating the slightest marks of pain. Some Beetles, when counterfeiting death, will suffer themselves to be gradually roasted, without moving a single joint."

When the House-spider changes its skin, which it does at certain seasons, an opening may be seen in the belly. Through this it draws all its limbs, and leaves the old covering hanging to the cord that sustained it during the operation.

The eyes of all the Spiders are placed on the upper part of their head, but in various positions. These have no muscles, and are therefore immovable. They also consist of only one lens each, and do not, as in other insects, possess the faculty of multiplying objects; but their number and situation enable the animals to see perfectly well in all necessary directions.

THE GARDEN-SPIDER.

The body of this Spider is brown and somewhat downy. On the thorax are four furrows, of which the two middle ones diverge towards the head. The abdomen, which is nearly spherical, has, from the middle to the extremity, three white lines.

The labor of the Garden-spider, is very different from that of the former species; yet it is not performed with less art. When desirous of flitting from one place to another, this animal fixes one end of a thread to the place where she stands, and then with her hind paws, draws out several other threads from the nipples, which being lengthened, and driven by the wind to some neighboring tree, or other



GARDEN SPIDER

object, are by their natural clamminess, fixed to it. As soon as the Spider finds that these are fastened, she makes of them a bridge, on which she can pass and repass at pleasure. This done, she renders the thread thicker, by spinning others to it. From this thread she often descends, by spinning downward to the ground. The thread formed by the latter operation she fixes to some stone, plant, or other substance. She reascends to the first thread, and at a little distance from the second begins a third, which she fixes in a similar manner. She now strengthens all the three threads, and, beginning at one of the corners, weaves across, and at last forms a strong and durable net, in the centre of which she places herself, with her head downward, to wait for her prey.



THE GARDEN SPIDER.

From its having been frequently remarked that Spiders spread their webs in solitary and confined places, to which it is sometimes difficult for flies to penetrate, M. de Vaillant concluded that these creatures must often remain long without food, and that, consequently, they were capable of enduring considerable abstinence. To ascertain the truth of this circumstance, he took a large Garden-spider, whose belly was about the size of a nut, enclosed it under a glass bell, which he secured with cement round its bottom, and left it in this situation ten months. Notwithstanding this deprivation of food, the insect appeared during the whole time equally vigorous and alert; but its belly decreased, till at last it was scarcely larger than the head of a pin He then put under the bell to it another Spider of the same species. For a little while they kept at a respectful distance from each other, and remained motionless; but presently the meagre one, pressed by hunger, approached and attacked the stranger. It returned several times to the charge; and, in these different conflicts, deprived the stranger of almost all its claws: these it carried away to its former situation, to devour. The meagre Spider had likewise lost three of its own claws, on which also it fed, and M. Le Vaillant perceived that, by this repast, its plumpness was in some degree restored. On the following day, the new comer, deprived of all its means of defence, fell a complete sacrifice. It was speedily devoured; and in less than twenty-four hours, the old inhabitant of the bell became as plump as it was at the first moment of its confinement.

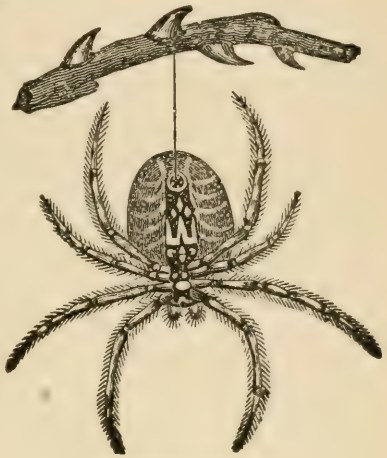
THE WANDERING SPIDER.

The color of the Wandering Spider is reddish brown, darker on the thorax than the abdomen. This part has, on each side, towards the top, a blackish line, or a brown spot. The two anterior legs, which are long, have blackish rings. The four hind legs are very short.

The Wandering Spider, which is very common on plants, does not

lie in wait for its prey, like several others: it is a lively and active hunter. Its head is furnished, as in the rest, with immovable eyes. Without any motion of the head, it perceives all the flies that hover around: it does not alarm, but stretches over them its arms, furnished with feathers, which prove nets that entangle their wings. The Spider seizes them between its merciless claws, and instantly sucks their blood.

In its general form, as well as in its manner of running, the Wandering Spider has much the appearance of a small crab. It carries its eggs enveloped in a small bag of whitish silk.



THE WANDERING SPIDER.

THE WATER-SPIDER.

This singular little creature is a very common inhabitant of our fresh waters. When in the water, its belly appears as if covered with a silver varnish. This, however, is nothing more than a bubble of air, attached to the abdomen by the oily humors which transpire from the body, and prevent the immediate contact of the water. By means of this kind of bubble, the insect forms its dwelling under the water. It fixes several silky threads to the stalks of water-plants, and then, ascending to the surface, thrusts the hinder part of its body above the water, drawing it back with so much rapidity, as to attach beneath a bubble of air, which it has the art of detaining below, by placing it under the threads above mentioned, and which it bends, like a covering, almost round it. It then again ascends for another air-bubble, and thus proceeds till it has constructed an aërial apartment under the water, which it enters into or quits at pleasure. The male constructs for himself one near that of the female, and afterwards breaks through the thread walls of the female's dwelling; and the two bubbles, attached to the bellies of both, unite into one, forming one large chamber.

The female takes care of the young-ones, and constructs similar apartments for them.

The figure of this Spider has in it nothing remarkable; and the insect may be overlooked among a crowd of curiosities, if the spectator be unacquainted with its singular art of constructing an aërial habitation under water, and thus availing itself of the properties of both elements. It lodges, during the winter, in empty shells, which it dexterously closes with a web.

THE TARANTULA.



THE TARANTULA.

This spider is somewhat more than an inch in length. The breast and belly are of an ash-color. The legs are likewise ash-colored, with blackish rings on the under part. The fangs are red within.

The Tarantula Spider is a native of Italy, Cyprus, Barbary, and the East Indies. This animal lives in fields, and its dwelling is in the ground, about four inches deep, half an inch wide, and closed at the mouth with a net. These spiders do not live quite a year. They lay about seven hundred and thirty eggs, which are hatched in the spring. The parents never survive the winter. Inflammation, difficulty of breathing, and sickness, are said to be the invariable consequences of the bite of this insect.

OF THE SCORPION TRIBE.

Scorpions may be considered as the most malignant and poisonous of all known insects. Their poison is emitted through three very small holes in the sting, one on each side of the tip, and the other on the upper part. In California there is a species, the *Scorpio Americanus*, which is eaten by the inhabitants.

These animals prey on worms and insects, and frequently even on one another. Their offspring are produced from eggs, of which one female lays a considerable number, After their appearance, they seem to undergo no further change than perhaps casting their skin from time to time, in the same manner as spiders.

THE COMMON SCORPION.



THE SCORPION.

This like other Scorpions, has a distant resemblance in shape to the Lobster, but it is infinitely more ugly. The head appears, as it were, jointed to the breast; and the mouth is furnished with two jaws; the under one of which is divided into two, and the parts, notched into each other, answer the purpose of teeth in breaking the food. On each side of the head there is a four-jointed arm, terminated by a claw, somewhat like that of a Lobster. The belly is divided into seven segments, from the lowest of which the tail commences: this, in the present

species, is armed with a hard, pointed, and crooked sting, the poison of which is very powerful.

In some parts of Italy and France these animals are among the greatest pests that can plague mankind; but in those countries of the East, where they grow to a foot in length, there is no removing a piece of furniture, without danger of being stung by them. There, we are told, they are nearly as large as small Lobsters.

Many experiments have been made to ascertain the strength of their poison; and, in warm climates, it has uniformly been found fatal to small animals. To man the wound is extremely painful. The place becomes inflamed, and the surrounding parts often turn livid, and require to be carefully dressed in order to prevent mortification.

OF THE CRAB TRIBE.

ALL the animals of this tribe have their bodies covered with a hard and strong shell. The head is united to the thorax or breast without any joint.

These animals live chiefly in the sea; some, however, inhabit the fresh waters, and a few live on land. They feed variously, on aquatic or marine plants, small fish, molluscæ, or dead bodies. The females carry their ova under their tail, which, for that purpose, is in general, much broader than that of the males.

The animals emphatically denominated *Crabs*, have a short, flat tail, bent close to the body in a hollow between the legs. The *Hermit-crabs* have a soft tail, without any crustaceous covering: this they fit into empty shells, or hollow stones. In the *Lobsters* the tail is the principal part of the body, being a very strong member, and employed with great advantage both in swimming and leaping. This is formed of six convex segments, which lie over each other, somewhat like the tiles of a house, and are terminated by five laminæ, or thin plates. The former are united by loose membranes, which admit of much motion. At the angle where the upper and lower parts join, these segments are furnished with a kind of crustaceous fins, bordered with hair, and consisting of several articulations, called by naturalists *pedes natatorii*. The fins are moved, backward and forward, and a little outward and inward, by small muscles, contained within each articulation. By means of these it is that the animals have their progressive motion at different depths in the water.

Most of the Crabs have eight legs, (a few, however, have six, or ten,) besides two large claws, which serve the purposes of hands. They have two eyes, situated on tubercles projecting from the head, and movable in any direction. When the extremities of these are viewed with a glass, they are found to be composed of a multitude of lenses, like the eyes of insects. For a sense of touch, these animals are furnished with antennæ, and palpi, or feelers. They have likewise a heart, with arterial and venous vessels, and branchiæ or gills for respiration. Their jaws are transverse, strong, and numerous; and the stomach is furnished with internal teeth.

THE LAND-CRAB.



LAND-CRAB.

Land-crabs are natives of the Bahamas, and of most of the other islands between the tropics. They live in the clefts of rocks, the hollows of trees, or in holes which they dig for themselves in the mountains. About the months of April and May in every year they descend in a body of some millions at a time, to the sea-coast, to deposit their spawn, and at this season the whole ground seems alive with them. They march in a direct line to their place of destination, and are said seldom to turn out of their way on account of intervening obstacles. Even if they encounter a lofty wall, or a house, they will attempt to scale it. If they arrive at a river, they wind along the course of the stream. They march very slowly, being sometimes three months or upward in gaining the shore.

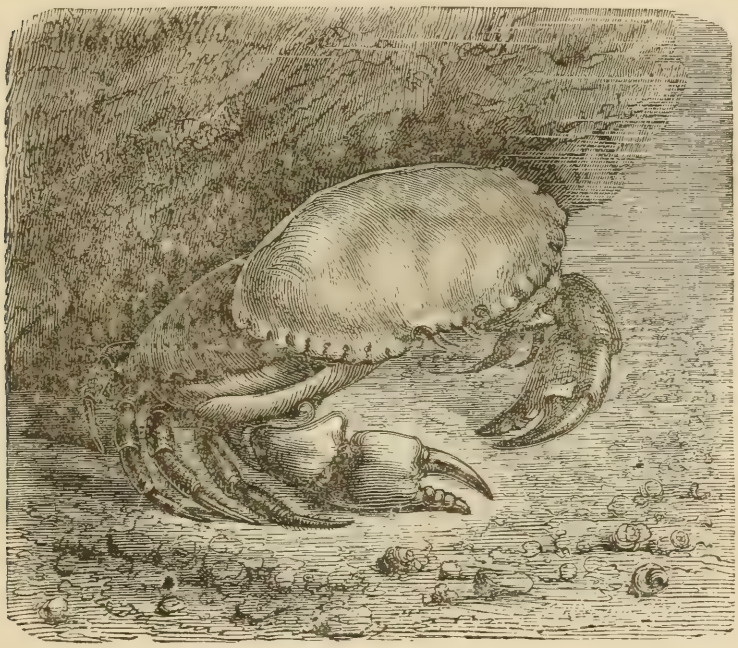
When arrived at the coast, they prepare to cast their spawn; for this purpose they go to the edge of the water, and suffer the waves to wash twice or thrice over their bodies. They then withdraw, in order to seek a lodging upon land. In the mean time the spawn is extruded in a bunch from the body, and adheres to the under parts of the tail. This bunch becomes as large as a hen's egg, and exactly resembles the roe of a Herring. In this state they again, for the last time, seek the shore, and shaking off the spawn into the water, leave it to the heat of the sun, to be brought to maturity. About two-thirds of the eggs are devoured by the fish which annually frequent the shores in expectation of this prey. Those that escape are hatched under the sand; and, not long after this, millions of the little Crabs may be seen quitting the shore, and slowly travelling towards the mountains.

The old ones, in their return, are feeble, lean, and so inactive, that they are scarcely able to crawl along; and their flesh at this time changes its color. Many of them are obliged to continue in the level parts of the country till they recover, making holes in the earth, which they block up with leaves and dirt. In these they cast their old shells, and continue nearly motionless for six or seven days, when they become so fat as to be delicious food. After this they march slowly back to the mountains.

THE COMMON, OR BLACK-CLAWED CRAB.

The most remarkable circumstance in the history of these animals, is the changing of their shells and broken claws. The former, is done once a year, and usually between Christmas and Easter. During the operation they retire among the cavities of the rocks and under great stones; and Dr. Darwin (from the authority of a friend who had been

engaged in surveying the sea-coasts) says, that a hard-shelled Crab always stands sentinel, to prevent the sea-insects from injuring the rest in their defenceless state; and that, from his appearance, the fishermen know where to find the soft ones, which they use for baits in catching fish; adding that, though the hard-shelled Crab, when he is on duty, advances boldly to meet the foe, and will with difficulty quit the field, yet at other times he shows great timidity, and is very expeditious in effecting his escape: if, however, he be often interrupted, he will, like the



CRAB MOULTING.

Spider, pretend to be dead, and will watch an opportunity to sink himself into the sand, keeping only his eyes above.

When the claw of a Crab is bruised, it bleeds, and the animal seems, by its motions, to experience much pain. For a while it moves it from side to side; then holding it perfectly steady in a direct position, the claw on a sudden gives a gentle crack, and the wounded part drops off; not at the joint, as might be imagined, but in the smoothest part of the limb.

Crabs are naturally quarrelsome, and frequently have serious contests, by means of those formidable weapons, their great claws. With these they lay hold of their adversary's legs; and wherever they seize, it is not easy to make them forego their hold. The animal seized has, therefore, no alternative but to leave part of the leg behind in token of victory.

THE HERMIT CRAB.

Having no shell to any part but its nippers, the Hermit Crab supplies by art what is denied to it by nature: for, taking possession of the deserted shell of some other animal, it occupies that, till, by becoming too large for its habitation, it is under the necessity of changing it.



THE HERMIT CRAB.

It is curious enough, in some countries, to observe this animal busily parading the sea-shore, along that line of pebbles and shells, which is formed by the furthest wave; still, however, dragging its old incommodious habitation at its tail, unwilling to part with one shell, even though a troublesome appendage, till it can meet with another more convenient. It stops first at one shell, turns it, passes by; then goes to another, contemplates that for a while, and, slipping its tail from the old habitation, tries on the new one. If this be found inconvenient, it quickly resumes the old one. It thus frequently changes, till at length it finds one that is light, roomy and commodious. To this it adheres, though the shell be sometimes so large as to hide both the body and claws of the animal.

But many trials and many combats are sometimes to be sustained by the Hermit Crab, before he is thus equipped: for there is often a contest between two of these animals for some favorite shell. They both endeavor to take possession. They strike with their claws, and bite each other, till the weakest is compelled to yield. The victor then takes possession, and, in his new acquisition, parades backward and forward on the strand, before his envious antagonist. These Crabs feed on small marine animals of various kinds.

THE LOBSTER.

These animals are extremely prolific. Dr. Baster says he counted twelve thousand four hundred and forty-four eggs under the tail of a female Lobster, besides those that remained in the body unprotruded. They deposit these eggs in the sand, where they are soon hatched.

Like the rest of their tribe, they are said annually to cast their shells. Previously to putting off their old shell, they appear sick, languid, and restless. They acquire an entirely new covering in a few days; but during the time that they remain defenceless, they seek some lonely place, lest they should be attacked and devoured by such of their brethren as are not in the same weak condition.

At the same time that they cast their shell, they change also their

COMBAT OF HERMIT CRABS.

stomach and intestines. The animal, while it is moulting, is said to feed upon its former stomach, which wastes by degrees, and is at length replaced by a new one.



THE LOBSTER.

Like some of the Crabs, these animals are said to be attached to particular parts of the sea.

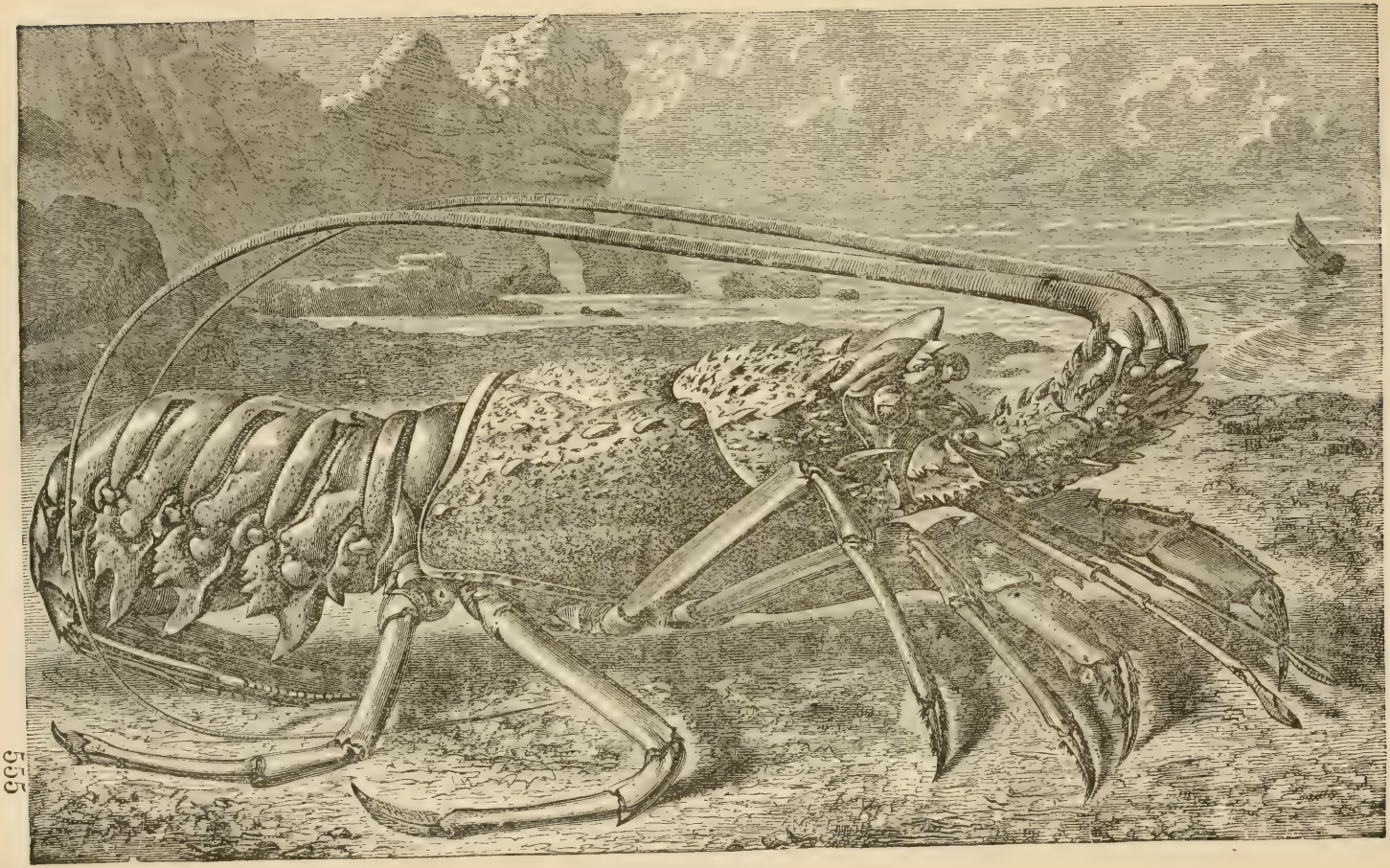
The pincers of one of the Lobster's large claws are furnished with knobs, and those of the other are always serrated. With the former it keeps firm hold of the stalks of submarine plants, and with the latter it cuts and minces its food very dexterously. The knobbed or numb claw, as the fishermen call it, is sometimes on the right, and sometimes on the left side, indifferently. It is more dangerous for a person to be seized by the cutting claw than the other; but, in either case, the quickest way of getting disengaged from the creature, is to pluck off its claw.

In the water these animals are able to run nimbly upon their legs or small claws; and, if alarmed, they can spring, tail foremost, to a surprising distance, almost as swiftly as a bird can fly. The fishermen can see them pass about thirty feet, and, by the swiftness of their motion, it is supposed that they may go much further. When frightened, they will spring from a considerable distance to their hold in the rock; and, what is not less surprising than true, will throw themselves into their hold in that manner, through an entrance scarcely sufficient for their bodies to pass.

The circumstance of Lobsters losing their claws at thunder-claps, or the sound of cannon, is well authenticated; and the fishermen are often jestingly threatened with a salute by the sailors. The restoration of claws thus lost may always be observed; for these never again grow to their former size. When the claws of Lobsters become inconvenient to the animals, from being injured, they always break them off.

THE PRAWN, AND SHRIMP.

Prawns are chiefly found among sea-weed, and in the vicinity of rocks at a little distance from the shore. They seldom enter the mouths of rivers. Their usual mode of swimming is on their backs, but when threatened with danger, they throw themselves on one side, and spring backward to very consderable distances. They feed on all the smaller kinds of marine animals, which they seize and devour with great voracity. In their turn, they are the prey of numerous species of fish; although the sharp and serrated horn in front of their head constitutes a very powerful weapon of defence against the attacks of all the smaller kinds.



SPRING LOBSTER.

Being in great request for the table, these are eagerly sought for by fishermen, who catch them either in osier baskets, similar to those employed in catching Lobsters, or in a kind of nets, called *putting nets.* These, which are well known to all frequenters of the sea-coasts, are five or six feet in width, and flat at the bottom; and are pushed along in the shallow water, upon the sandy shores, by a man who walks behind. When fresh the color of the Prawn is somewhat cinereous; but, when boiled, it changes to a beautiful light red. The appearance of the Prawn in full swimming action is very elegant. The body is transparent, and the front feet are generally laid backward and tucked under the body like the fore-legs of a stag in the act of leaping.



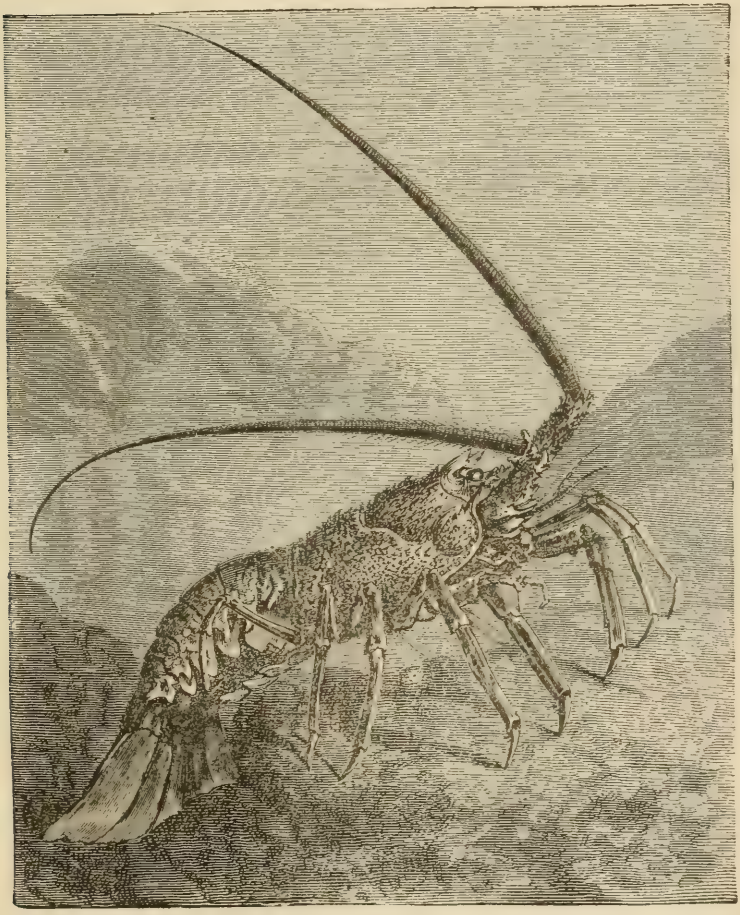
A SHRIMPER

At the side of the head there is frequently to be observed a large and apparently unnatural lump. This, if examined, will be found to contain, under the thoracic plate, a species of crustaceous animal, which occupies the whole cavity, and there feeds and perfects its growth.

The Shrimp is much smaller than the Prawn, and is by no means so much esteemed for the table as this. It frequents sandy sea-shores in great abundance, and not unfrequently enters harbors, and even the ditches and ponds of salt-marshes. Its habits and economy are, in most respects, similar to those of the Prawn.



THE SHRIMP.



CRAW-FISH.

THE COMMON, OR FRESH-WATER CRAW-FISH.

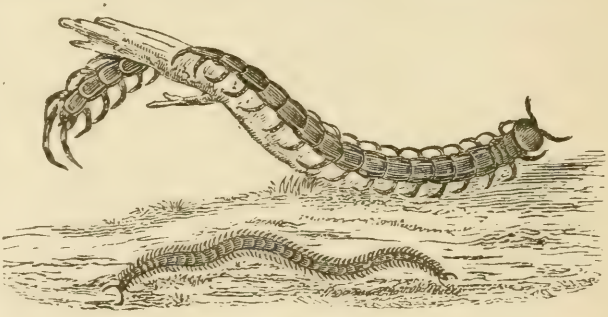
Craw-fish are found in many rivers, edged in holes which they form in the clayey banks; and their presence is generally esteemed an evidence of the goodness of the water. They are frequently caught by sticks split at the end, with a bait inserted in the cleft, and stuck in the

mud at the distance of a few feet from each other. These sticks, after remaining some time, are taken up, and generally with an animal adhering to each. They are gently drawn out, and a basket is put under to receive the animals, which drop off when brought to the surface.

THE GREAT CENTIPEDE.

The Great Centipedes vary much both in size and color. Some of them are of a deep reddish brown, others of a yellow ochre color, livid yellow, or tinged with red; and they are sometimes seen more than a foot in length. Their legs terminate in very sharp hooks, or nails of a shining black color.

None of the insect tribe, the Scorpions excepted, are so formidable in appearance as the Centipede. It is found in the East and West Indies, and in various parts of Africa, inhabiting chiefly the woods, where it is preyed upon by the different species of snakes. It is, however, sometimes found in houses, and is said to be so common in particular districts, that the inhabitants are obliged to have the feet of their beds placed in vessels of water, in order to prevent their being annoyed during the night by these horrible reptiles.



THE CENTIPEDE AND MILLEPEDE.

Gronovius says, that all the legs of this animal are venomous; but its most formidable weapons are the two sharp and hooked instruments, that are placed under the mouth, with which it destroys its prey. At the extremity of each of these there is a small opening, through which it is supposed the Centipede emits the poisonous fluid into the wound inflicted by the fangs.

Leeuwenhoek, desirous of ascertaining some facts relative to the poison emitted by the Centipede, placed a large fly within the reach of one of these animals. He seized it between a pair of the middle feet, then passed it from one pair to the next, till it was brought under the fangs; which were plunged into its body, and it died instantly. M. St. Piere says, that, in the Isle of France, his dog was bitten by a Centipede upwards of six inches in length, and that the wound became ulcerous, and was three weeks in healing. He was highly diverted in observing one of these animals overcome by a vast number of Ants, that attacked it in conjunction, and, after having seized it by all its legs, bore it along, as workmen would have done a large piece of timber. The poison of the Centipede is not more injurious than that of the Scorpion, and seldom proves fatal to the larger animals.

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